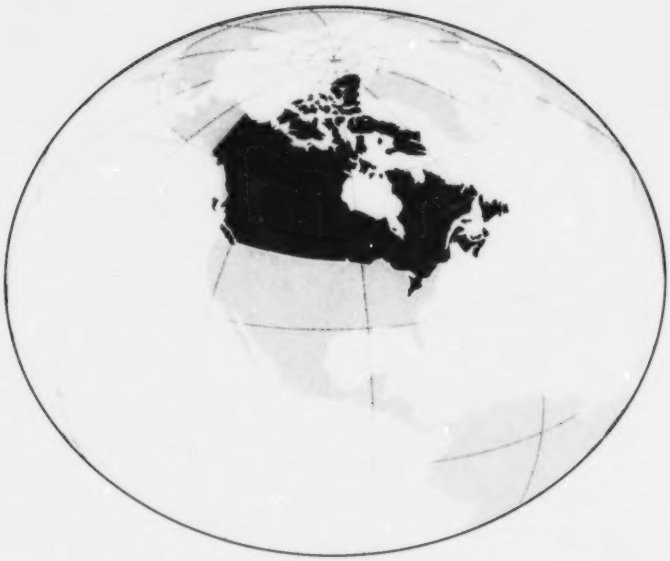


National Energy Board
Annual Report 1988

ERRATA

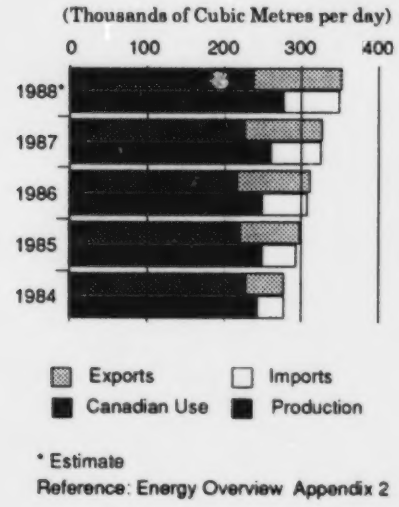
NATIONAL ENERGY BOARD

1988 ANNUAL REPORT

Figure 3, page 8 - Canadian Crude Oil and Equivalent - Supply and Disposition

figure should appear as follows:

Figure 3
Canadian Crude Oil and Equivalent
Supply and Disposition



* Estimate
Reference: Energy Overview Appendix 2

Figure 22, page 45 - Gas Pipeline Companies Regulated by the National Energy Board (map)

In the legend, "Proposed pipelines" and "Certificated but not built" should be reversed.

NOTE: Gazoduc TQM is the company's business name. The corporate name remains **Trans Québec & Maritimes Pipeline Inc.**

National Energy Board

31 March 1989

The Honourable Jake Epp, P.C., M.P.
Minister of Energy, Mines and Resources
Ottawa, Ontario

Dear Mr. Epp:

I am pleased to submit the Annual Report of the National Energy Board for the year ending 31 December 1988 in accordance with the provisions of section 133 of the National Energy Board Act, Revised Statutes of Canada, 1985, chapter N-7.

Yours sincerely,

R. Priddle,
Chairman

National Energy Board Profile

The National Energy Board is a federal regulatory tribunal that was created by an Act of Parliament on 2 November 1959. During the past 29 years, it has played an important role in the development of Canada's energy sector.

The Board's regulatory powers under the *National Energy Board Act* include the licensing of oil, natural gas, and electricity exports, the certification of interprovincial and international pipelines and designated interprovincial and international power lines, and the setting of tolls and tariffs for oil and gas pipelines under federal jurisdiction.

The *Act* also requires that the Board keep under review the Canadian supply of all major energy commodities, with emphasis on electricity, oil, natural gas, and the by-products derived from oil and natural gas, as well as the demand for Canadian energy in Canada and in export markets.

The Board also has specific responsibilities under the *Northern Pipeline Act* and the *Energy Administration Act*. In addition, Board inspectors have been appointed safety officers by the Minister of Labour to administer Part IV of the *Canada Labour Code*.

Head Office:

National Energy Board
473 Albert Street
Ottawa, Ontario
K1A 0E5

(613) 998-7204

Calgary Office:

National Energy Board
4500 - 16th Avenue N.W.
Calgary, Alberta
T3B 0M6

(403) 292-6700

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K1A 0E5
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473, rue Albert
Ottawa (Canada)
K1A 0E5
(613) 998-7204

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Renumbering of Sections of National Energy Board Act

The Revised Statutes of Canada, 1985 became effective 12 December 1988 and include all federal statutes and their amendments up to 31 December 1984. There were no substantive changes to the content of the National Energy Board Act, but extensive changes in the numbering of the sections were made. In this report, references to sections of the Act use the new section numbers with the old number following in brackets.

Chairman's Letter

The year 1988 was a busy and productive one for the Board.

The Board approved major new electricity exports; used its new market-based gas export procedures in dealing with two large new gas export applications; for the first time in some years, it certificated a major gas pipeline expansion; and it continued to devote much effort to pipeline toll changes. As well, the Board published its biennial staff report on Canadian energy supply and demand, the definitive study in this area, as well as a major new report assessing the development of the Canadian gas market.

The Canadian interprovincial gas market is now substantially deregulated, in part as a result of Board decisions relating to pipeline access and tolls.

Perhaps the last major NEB piece of the deregulation puzzle was put in place when, just after the year end, the Board announced its decision in the first phase of the 1988 TransCanada tolls proceeding. This decision, which dealt primarily with toll design and tariff matters, ended with effect from 1 November 1989 the Board's three-year old prohibition on self-displacement by distributors of gas they were taking from TransCanada. Removal of the prohibition on self-displacement will assure distributors equal access to transportation services on TransCanada's pipeline. The Board sees open pipeline access as an essential element of a deregulated interprovincial gas market.

There was much emphasis in the Board's work during the year on gas exports, in terms of approval of new pipeline capacity and of new export licences. This reflected the Canadian industry's long-term confidence in export markets and in its ability to supply gas to them. The year 1988 was a record one for gas exports, with annual volumes approximately 25 percent greater than ever before.

Continuing high levels of domestic demand and the increase in export sales resulted, with few exceptions, in utilization of the Canadian gas transmission systems approaching capacity ceilings.

The Board expects in the next two years to receive applications for further major gas pipeline expansions, as well as related export licences. Given the large capital expenditures involved, their potential effect on tolls, and the related interest of toll payers, it can be expected that these projects will receive critical scrutiny.

The only major oil pipeline expansion approved by the Board in 1988 was one by Trans Mountain Pipe Line to enable it to ship increased quantities of heavy crude oil to Pacific rim markets. The major issue in the hearing was environmental concerns raised by residents of Burnaby where additional pipeline terminal facilities are to be constructed.

The Board is conscious of its responsibility for environmental protection. I believe its record is excellent: there have been no sustained problems relating to matters under the Board's jurisdiction; incidents that have occurred have been resolved promptly; and the Board gives careful consideration to environmental factors in dealing with applications for pipelines, power lines and energy exports. We have nevertheless decided to enhance our activity in this area. Therefore we shall, for example, monitor emerging environmental regulations in other jurisdictions with a view to their possible application to the Board's activity; we shall study and report on the environmental implications of our energy supply and demand projections; the Board's interface with the regulated industry on environmental matters, most recently related to PCB inventory and control, will be extended; and we will give careful consideration to the environmental considerations outlined in the Kierans report *Energy and Canadians into the 21st Century,* including obtaining a better understanding of the implications for our activities of the concept of "sustainable development".

The amendments made to the *National Energy Board Act* as a result of the government's Free Trade legislation, which was enacted at year-end, were not without public controversy. Now that the law has been changed, it is up to the Board to interpret these changes, mainly as it deals through the public hearing process with applications for energy export licences. As with other aspects of the discharge of its regulatory responsibility, the Board will take its decisions in the light of the evidence before it

and against the background of its general responsibility to serve the Canadian public interest.

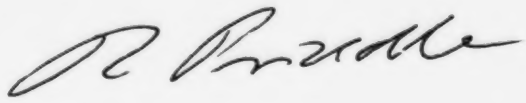
Another important change in1988 related to the reduced regulation of electricity exports. The Minister of Energy, Mines and Resources in September issued a policy statement which, it is anticipated, will later find reflection in further changes to the Board's *Act*. Meanwhile, the Board has decided to adapt its processes, to the degree that the law presently allows, to reflect the new policy. However, complete implementation can only be achieved by change to its *Act*.

The Board continued during 1988 to seek means to improve its hearing processes, in cooperation with interested parties. The Board has further defined those areas in which it thinks progress could be made in this regard. It is conscious of the costs of public hearings and of the fact that those hearings are only a means to an end - efficient regulation in the public interest - and not an end in themselves. Indeed, in October the Board published its current position on suggestions made by interested parties on improvements that could be made to its regulatory process. For the first time, the Board acknowledged that, in defined circumstances, it was prepared to address negotiated settlements by parties in toll proceedings. As well, we indicated that we would like to try to hold major toll hearings every two years rather than annually. To this end, the recent toll decision for Trans Québec & Maritimes covers tolls for 1989 and 1990. However, public hearings are likely to remain an important activity and their further improvement depends in large part on the goodwill and cooperation of applicants to the Board and intervenors in the relevant proceedings. Much progress remains to be made in this area and I am hopeful that some of it can be achieved in 1989.

Also in the matter of improving our regulatory process, the Board in 1988 issued new regulations for onshore pipelines and for dealing with crossings by other utilities of pipelines and power lines. The new regulations give the Board and the industry a simpler set of tools to work with, while at the same time continuing to properly safeguard the public interest. As well, the crossing regulations are based on the principle of giving greater flexibility to the affected pipeline companies and contractors. The Board will continue to ensure through audits and inspections that public safety is maintained.

The Board ended the year with eight permanent and two temporary Members. Mr. Jacques Farmer of Montreal, Quebec retired in April, after 14 years of varied and distinguished service with the Board. In September, Mr. David B. Smith of Priddis, Alberta was appointed a Temporary Member of the Board for a term of three years and Mr. Kenneth W. Vollman, originally of Luseland, Saskatchewan, was appointed a Temporary Member for a period of one year. In November, Mr. John R. Jenkins of Medicine Hat, Alberta, was re-appointed as a Member for a term of one year.

The Board was again well served by its staff which handled with distinction the heavy demands of hearing work, free trade and the publication of two major studies.



R. Priddle

Energy Developments

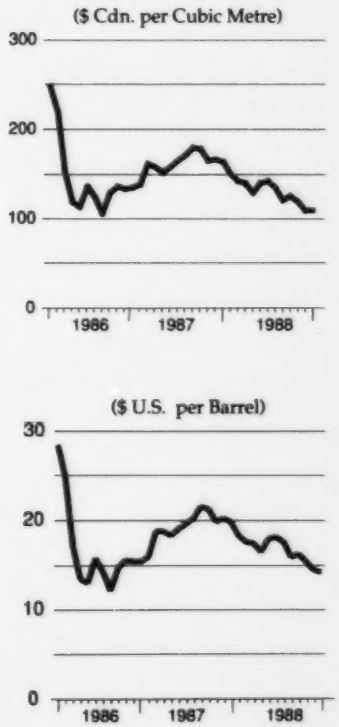
Canadian exports of petroleum and natural gas increased over 20 percent in 1988; as a result, many pipelines operated at or close to capacity. Electricity exports fell 34 percent to the lowest level since 1980.

International Oil Prices

During 1988, crude oil prices fluctuated considerably. While oil prices during 1988 generally did not fall as low as those in 1986, they were well below 1987 levels for most of the year.

The reason for the weakness in prices was again the imbalance between world demand and supply. World oil demand, at an average of over 50 million barrels per day, was about 1.5 million barrels per day higher than in 1987. However, supply increased by even more than the increase in demand (resulting in an increase in inventories) because production by the Organization of Petroleum Exporting Countries, (OPEC), exceeded its self-imposed quotas and non-OPEC production rose. The principal factor influencing oil prices during 1988 - and the main reason for the fluctuations in price - was the unsuccessful attempts by OPEC to restrain production.

Figure 1
Average Price of West Texas Intermediate Crude Oil in Chicago



OPEC began the year with quotas identical to those of 1987 which, together with expected production by Iraq which was not included in the quota agreement, amounted to some 17.7 million barrels per day. However, its average production exceeded 19 million barrels per day during the year.

In November, OPEC agreed on quotas for 1989. The new quotas, totalling 18.5 million barrels per day, included production by Iraq, which signed the new agreement. This agreement led to a firming in prices toward the end of 1988 for oil to be delivered in early 1989.

Energy Production, Consumption and Trade

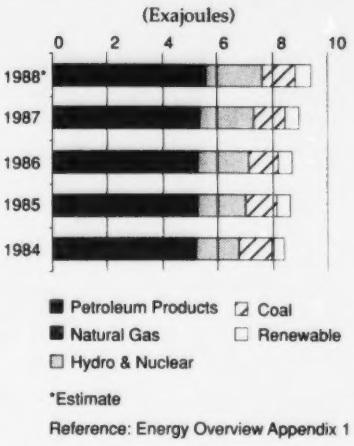
In 1988, as in 1987, high economic growth in Canada and sharp increases in the level of exports contributed to the rise in Canadian energy production.

Primary energy demand rose by some 5 percent in 1988. Natural gas and coal were among the forms of energy that contributed most to the increase. In addition to increased economic activity, a decline in average temperatures in most Canadian regions also played a major role in the growth of primary energy demand.

Oil exports grew by 18 percent in 1988, and imports increased by 12 percent. Consequently, net export volumes rose by 27 percent. However, because of a decrease in prices, net export revenues dropped from $2.5 billion in 1987 to $2.2 billion in 1988.

In 1988, Canadian natural gas producers continued to benefit from increased access to American markets. Natural gas exports rose by 28 percent, from 1 057 petajoules in 1987 to more than

Figure 2
Canadian Energy Consumption



*Estimate

Reference: Energy Overview Appendix 1

Table 1

Canadian Trade in Petroleum, Gas and Electricity
(Petajoules and Billions of Dollars)

	1986		1987		1988[e]	
	PJ	$ Billions	PJ	$ Billions	PJ	$ Billions
Exports						
Petroleum[a]	1 745	5.8	1 877	7.0	2 218	6.4
Natural Gas	790	2.5	1 057	2.6	1 355	3.0
Electricity[b]	127	1.1	163	1.2	107	0.9
Total Exports	**2 662**	**9.4**	**3 097**	**10.8**	**3 656**	**10.3**
Imports						
Petroleum[a]	944	4.0	1 126	4.5	1 263	4.2
Natural Gas	10	[c]	4	[c]	24	0.1
Electricity[b]	1	[c]	2	[c]	10	0.1
Total Imports	**955**	**4.0**	**1 132**	**4.5**	**1 297**	**4.3**
Net Export Total	**1 707**	**5.4**	**1 965**	**6.3**	**2 383**	**6.0**

The numbers in this table have been rounded.

e - Estimate
a - Includes petroleum products and natural gas liquids. Excludes exchanges between Canada and the United States.
b - Electricity is converted at 3.6 petajoules per terawatt hour on the basis of the energy content of the electricity output. Excludes exchanges between Canada and the United States.
c - Less than $50 million.

1 350 petajoules in 1988. While in 1987 the rise in export volumes was almost entirely offset by a decrease in export prices, in 1988, export revenues grew by 15 percent.

In 1988, electricity export sales declined by 34 percent, to their lowest level since 1980. Nonetheless, average export prices increased by some 11 percent and, as a result, revenues dropped by only 27 percent. The decrease in electricity export sales to the United States was due to a number of factors, in particular, the availability of oil at relatively low prices. Oil prices have a direct impact on the operating costs of certain thermal generating stations in the United States which produce electricity that competes with Canada's electricity exports.

Crude Oil and Petroleum Products

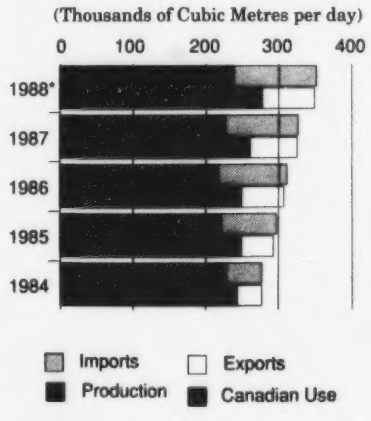
Production of Canadian Crude Oil

Crude oil production in Canada (including light crude oil, pentanes plus, and heavy crude oil) totalled approximately 277 000 cubic metres per day in 1988, about seven percent above the 1987 level of nearly 260 000 cubic metres per day.

The supply of conventional light crude oil increased by approximately two percent in 1988 to 160 400 cubic metres per day. An average of some 2 000 cubic metres per day was shut-in during 1988, reflecting a tight capacity situation on the Interprovincial pipeline system. During the year, synthetic crude oil production averaged approximately 34 400 cubic metres per day, about 20 percent higher than in 1987. Both the Suncor and Syncrude plants operated at high output levels in 1988 and significant increases in output resulted from the completion of the capacity expansion project at Syncrude.

Blended heavy crude oil supply (i.e., including condensate) reached a record level in 1988, rising from 73 000 cubic metres per day to about 82 000 cubic metres per day, on account of increased development activity in both conventional and bitumen-producing areas. In the fourth quarter, however, lower crude oil prices prompted heavy crude oil and bitumen producers to reduce development activities, to shut in uneconomic wells and to abandon others to minimize capital outlays. During November, the Co-op Upgrader at Regina came on-stream. An operating capacity of 8 000 cubic metres per day is expected by about mid-1989.

Figure 3
Canadian Crude Oil and Equivalent
Supply and Disposition



* Estimate
Reference: Energy Overview Appendix 2

Oil Refining

In 1988, the quantity of crude oil refined in Canada increased by about six percent. Most of the rise occurred in the Atlantic region where the Come-By-Chance refinery was recommissioned in September 1987 as an export refinery. The growth in crude oil processed at Canadian refineries reflected rising product demand in both domestic and export markets. Domestic demand for main products (including motor gasoline, middle distillates and heavy fuel oil) rose by about six percent compared with 1987, while export demand increased by 43 percent. In the domestic market, demand for light products such as gasoline and diesel recorded growth rates of three percent and eight percent respectively. Heavy fuel oil use grew by some 19 percent, reflecting new demand by the electricity generating utilities in the Atlantic provinces and by the pulp and paper industry in Quebec.

Canadian refineries purchased domestic and foreign crude oil at a rate of about 166 600 and 71 700 cubic metres per day respectively in 1988. Compared with 1987, this was an increase of about three percent in domestic purchases and 14 percent in foreign crude oil purchases. Offshore supply increased sharply in the Atlantic provinces to satisfy the requirements of the Come-By-Chance refinery but fell in Quebec and Ontario. Imports from the North Sea area again represented the largest share of our foreign purchases.

Crude Oil Exports

Total crude oil exports, including synthetic crude oil, rose to 112 800 cubic metres per day from 99 600 cubic metres per day in 1987. The 1988 total was composed of 50 200 cubic metres per day of light crude oil and 62 600 cubic metres per day of heavy crude oil. The estimated value of crude oil exports in 1988, however, was $4.0 billion compared with $4.9 billion in 1987, reflecting the drop in international oil prices.

The American mid-west continued to be Canada's most important market. Smaller volumes were shipped to the eastern seaboard and American Gulf destinations from Montreal, and to the American west coast and far east markets from Vancouver.

The largest export buyers of light Canadian crude oil in 1988 were Clark Oil, Conoco, Sun Refining and United Refining; for heavy Canadian crude oil, the largest foreign buyers were Koch Refining, Unocal, Mobil and Amoco. (Refer to Oil Appendix 5 for more details.)

Figure 4
Crude Oil F.O.B. Export Price

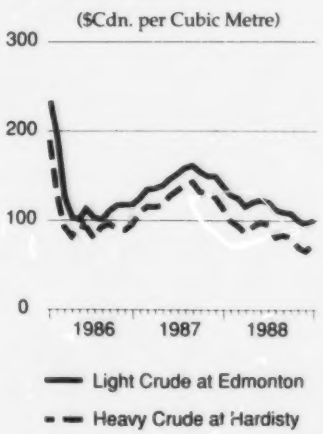
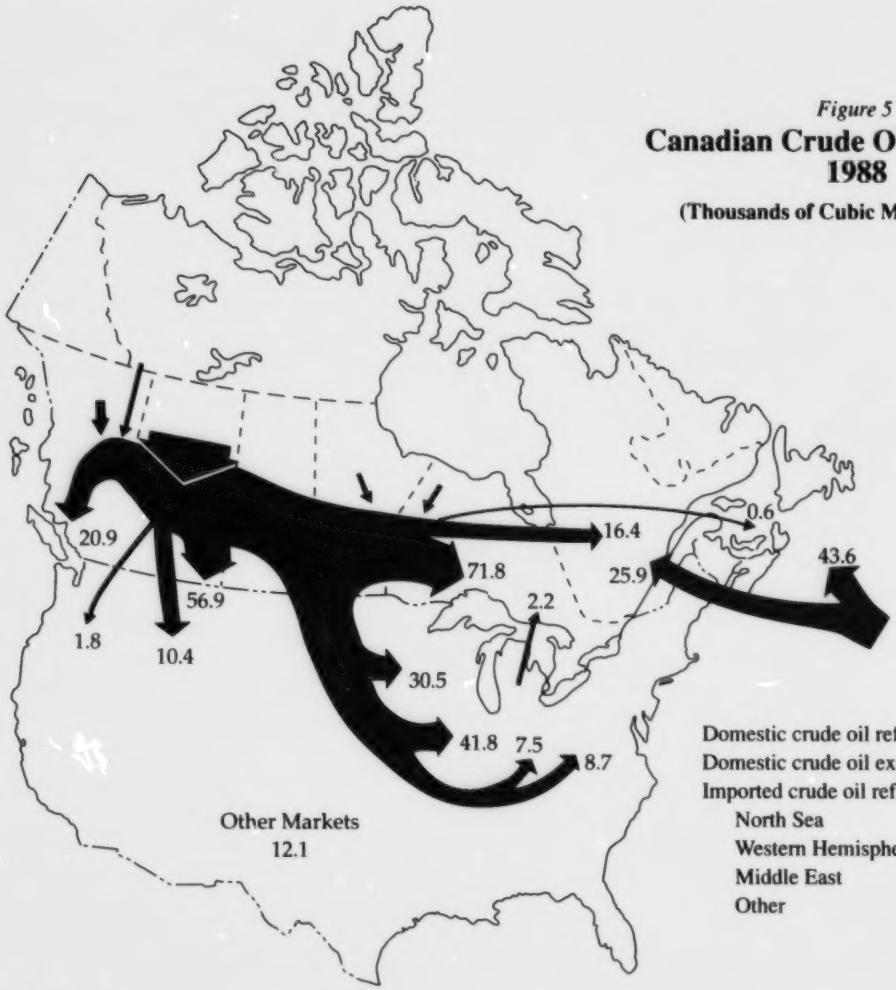


Figure 5

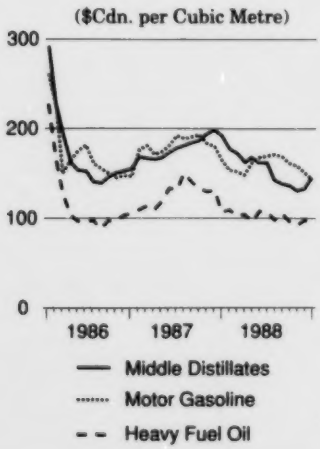
Canadian Crude Oil Disposition
1988

(Thousands of Cubic Metres per Day)



Domestic crude oil refined in Canada	166.6
Domestic crude oil exported from Canada	112.8
Imported crude oil refined in Canada	71.7
North Sea	44.2
Western Hemisphere	9.4
Middle East	9.4
Other	8.7

Figure 6
Main Petroleum Products
Average F.O.B. Export Price



Main Petroleum Product Exports

During 1988, main petroleum product export volumes averaged 32 000 cubic metres per day, an increase of 44 percent over the previous year. Export revenues, however, excluding products from processing agreements, declined by 18 percent to $ 0.8 billion, reflecting generally weaker world oil prices. Figure 6 shows fluctuations in the export prices of main petroleum products during 1987 and 1988.

The United States was again the largest buyer of petroleum products, accounting for 96 percent of total exports. Exports from Atlantic Canada were much higher because of the new refining capacity at Come-By-Chance. Export volumes by type of product and by region are shown in Table 2.

Table 2
Petroleum Product Exports, 1988
(Thousands of Cubic Metres)

	Motor Gasoline	Middle Distillates	Aviation Turbine Fuel	Heavy Fuel Oil	Partially Processed Oil	Total[a]
Atlantic	2 249	2 615	376	1 013	772	7 025
Quebec	111	345	-	307	-	763
Ontario	196	653	104	801	-	1 754
Prairies	255	412	162	66	-	895
British Columbia	555	413	205	70	21	1 264
Total	**3 366**	**4 438**	**847**	**2 257**	**793**	**11 701**
Average Export Price ($/m³)	**159**	**146**	**151**	**92**	**b**	**-**

a - Excludes propane, butanes, lubricants, greases, and asphalt.
b - Cannot be released for reasons of confidentiality.

Oil Pipeline Capacity

In spite of the completion of several construction projects in the past few years, the Interprovincial pipeline operated at capacity in 1988. Interprovincial was frequently required to apportion pipeline space among shippers as tenders exceeded pumping capacity. Trans Mountain, the other major carrier of crude oil and refined petroleum products to domestic and export locations, did not have to apportion space in 1988. It did, however, operate at or close to capacity throughout the year.

Both pipeline companies are assessing the need to increase capacity. Their decisions as to the need for additional facilities will, of course, depend on their projections of crude oil prices and supply. Such expansions would be subject to Board approval.

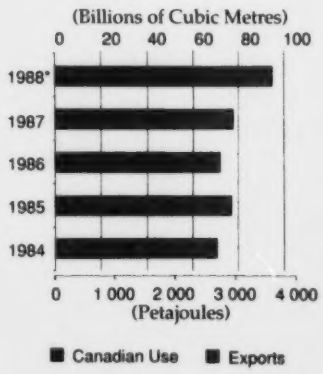
Natural Gas

Domestic Supply and Demand

Direct sales of natural gas increased very rapidly during 1988, reflecting the adjustment of markets to deregulation of the gas industry and competition among gas producers.

Net natural gas sales grew by nearly 10 percent, from 47.8 billion cubic metres in 1987 to 52.1 billion cubic metres in 1988, owing to increases in all the major consuming sectors.

Figure 7
Natural Gas
Supply and Disposition

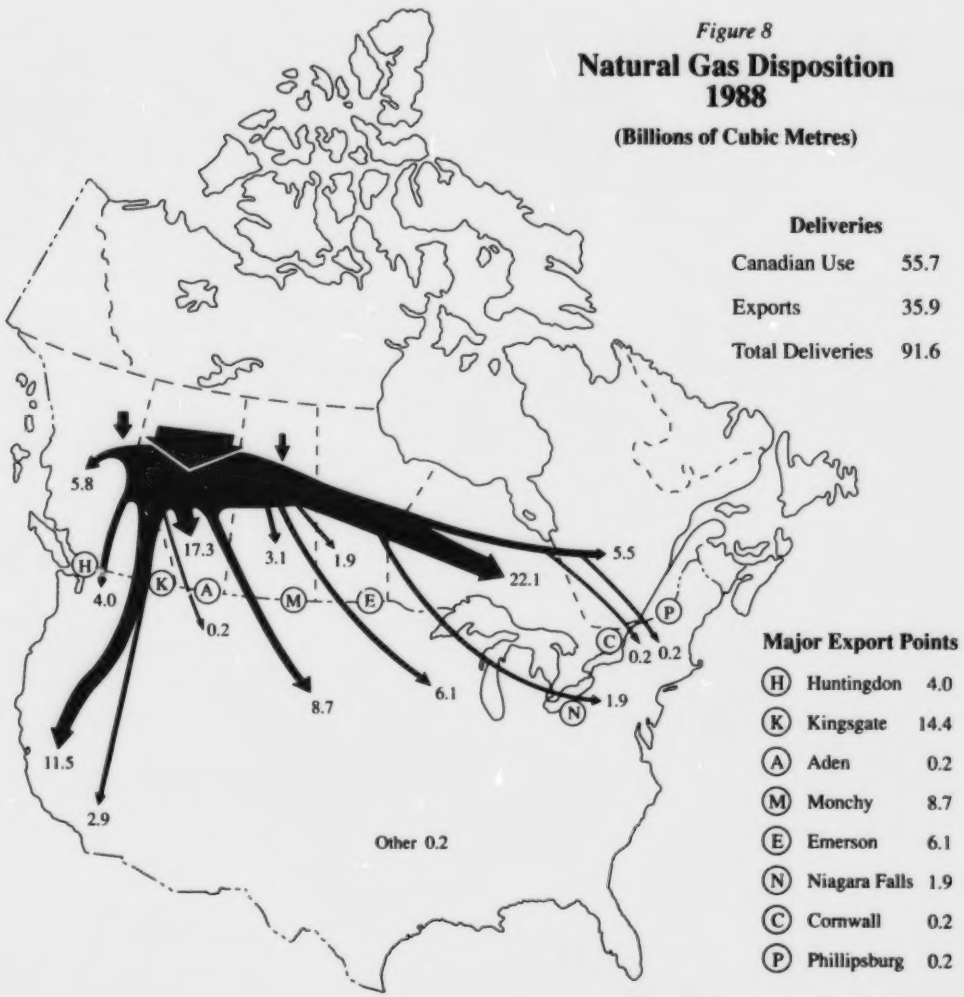


*Estimate
Reference: Energy Overview Appendix 3

Figure 8

Natural Gas Disposition
1988

(Billions of Cubic Metres)



Sales in the residentail and commercial sectors rose as a result of a significant drop in average Canadian temperatures. In the industrial sector, sales increased mainly because of a sharp rise in economic activity.

As a result of the substantial growth of natural gas sales in domestic and export markets, natural gas production increased by 13.8 billion cubic metres (from 77.8 billion cubic metres in 1987 to 91.6 billion cubic metres in 1988).

Exports

Gas exports, all of them to the United States, rose by 28 percent in 1988, from 28 billion cubic metres to 35.9 billion cubic metres.

However, natural gas prices fell, reflecting gas-to-gas competition in the American market. Export prices averaged $2.20 per gigajoule in 1988 compared with $2.43 per gigajoule during 1987, a decline of approximately 9 percent.

Overall, there was an increase of about 15 percent in total gas export revenues in 1988, from $2.6 billion to $3.0 billion.

California accounted for 39 percent of Canada's 1988 gas export sales, the central region 39 percent, the Pacific northwest 11 percent, and the northeast 9 percent. (Figure 10)

The central region was responsible for 83 percent of the year-over-year increase in export volumes and most of the remainder went to the northeast and California. As a result of the improvement in total export volumes, the Canadian share of the American gas market rose to approximately 7.0 percent from 5.8 percent in the previous year.

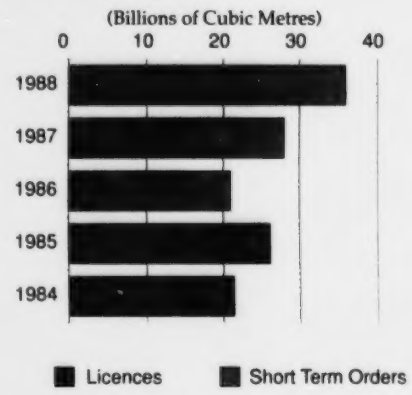
Access to American pipeline systems improved significantly. By the end of 1988, 20 major American pipelines were open access carriers, four with direct access to Canadian gas. This facilitated rapid growth in short-term sales which grew from 6.1 billion cubic metres in 1987 to 11.3 billion cubic metres in 1988. Short-term sales accounted for about 32 percent of total natural gas exports in 1988. Three other large pipeline companies, Pacific Gas Transmission, Midwestern and Great Lakes, have direct access to Canadian gas but are not open access carriers. However, this did not restrict Canadian exporters' access to American markets as these pipelines were contractually fully committed and were operating near capacity.

At year-end 1988, the outlook for 1989 export sales was positive; most interstate pipelines carrying Canadian gas were providing open access and gas export prices were expected to stabilize.

Natural Gas Liquids

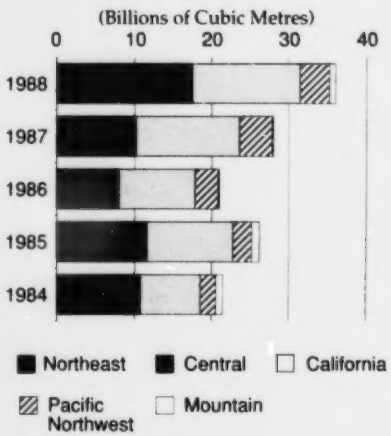
The estimated total net Canadian production of propane and butanes in 1988 was 9.1 million and 5.5 million cubic metres respectively, approximately nine percent and seven percent respectively above the previous year. Ethane production in 1988 is estimated at 10.3 million cubic metres, an increase of about 11 percent compared with 1987. While no ethane was exported in 1988, propane and butane exports displaced American imports from other sources and rose by 44 percent and 22 percent, totalling approximately 3.7 and 2.9 million cubic metres, respectively.

Figure 9
Natural Gas Exports



Note: Exports for terms of less than two years were effectively deregulated as a result of the October 1985 Agreement on Natural Gas Markets and Prices.

Figure 10
Natural Gas Exports by Region



Electricity

Generating Capacity

In 1988, Canada's total net generating capacity was approximately 96 101 megawatts, an increase of about 1 434 megawatts, or two percent over 1987.

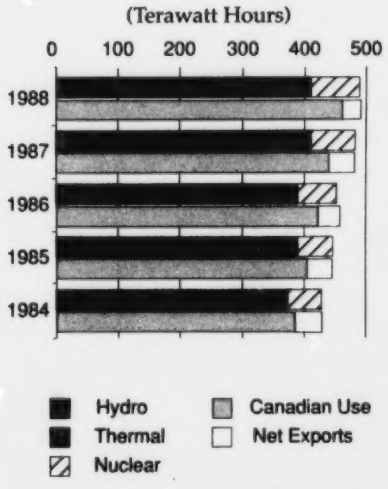
Generation and Consumption

Total generation of electricity in 1988 was an estimated 490 000 gigawatt hours, up two percent over 1987. Approximately 62 percent of the total was supplied from hydroelectric generation, 22 percent from conventional thermal generation and 16 percent from nuclear generation. Hydroelectricity's share of total generation was down slightly from the previous year as a result of lower water levels experienced by Canadian utilities. Total Canadian consumption in 1988 is estimated to have been 463 000 gigawatt hours, an increase of five percent over 1987.

Export Sales

In 1988 total sales amounted to 29 728 gigawatt hours, a decrease of 34 percent from 1987 and the lowest level of sales since 1980. Revenue from 1988 electricity exports of $880 million represents a decrease of 27 percent from last year. All major exporting utilities reported lower export sales compared to 1987.

Figure 11
Electricity Generation and Disposition



Reference: Energy Overview Appendix 4

The New England and New York markets for Canadian electricity were sluggish throughout most of the year. Consequently, export sales from New Brunswick Power, Hydro-Québec and Ontario Hydro decreased by 16 percent, 28 percent and 23 percent respectively from 1987 levels. For the most part, the reduction in electricity exported was attributed to strong domestic demand, low water levels and lower-priced oil for the American producers.

Manitoba Hydro's exports have fallen substantially in the last two years. A prolonged dry period in Manitoba, which began in 1987 and continued throughout 1988, lowered its hydroelectric production and caused its sales to slip from seven terawatt hours in 1986 to less than one terawatt hour this year. Manitoba Hydro was a net importer of electricity for every month in 1988 with the exception of May when it benefitted from the spring run-off. Net imports were 1 360 gigawatt hours at a net cost of $13.9 million. Saskatchewan Power was also a net importer in 1988, where net imports were 267 gigawatt hours at a cost of $5 million.

B.C. Hydro's export sales were also down from the previous year. However, 1987 exports had been exceptionally high and, even though its export sales were down by 49 percent in 1988, B.C. Hydro was still the second largest exporter of electricity, after Hydro-Québec.

At 62 percent, hydro remained the leading source of Canadian production for electricity exports; however, due to lower sales from the hydro-based utilities, its share was lower than in previous years. Coal was the second leading source at 22 percent, followed by nuclear at eight percent, oil at five percent and imports at two percent. Coal's share was up over the previous year partly because of B.C. Hydro's exports of coal-fired energy purchased from Alberta. These exports had begun in late 1987.

Figure 12 shows exports and imports in 1988 as well as interprovincial transfers for the 12 months ending 31 October

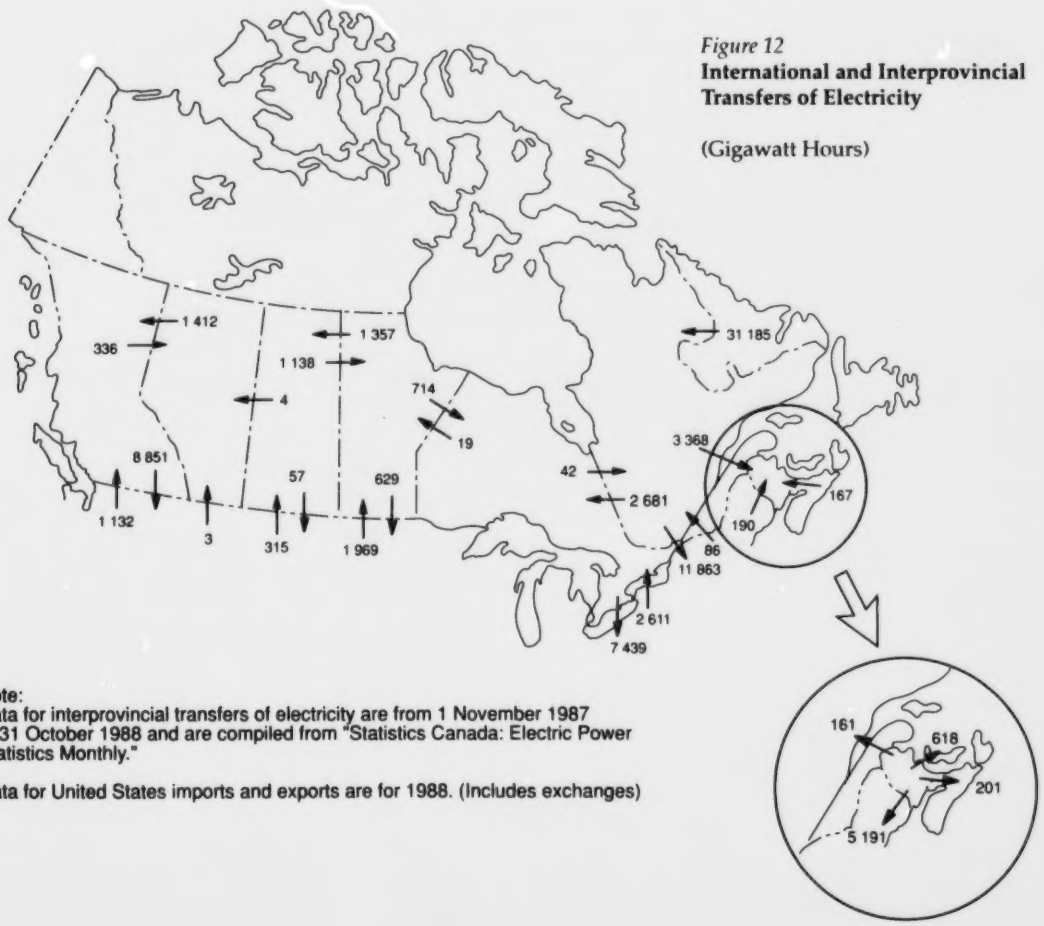


Figure 12
International and Interprovincial Transfers of Electricity

(Gigawatt Hours)

Note:
Data for interprovincial transfers of electricity are from 1 November 1987 to 31 October 1988 and are compiled from "Statistics Canada: Electric Power Statistics Monthly."

Data for United States imports and exports are for 1988. (Includes exchanges)

1988. Table 3 shows, by province, the destination of all exports. For the first time, in 1988, the New England region was the leading import area, accounting for about 39 percent of all Canadian electricity exports.

Table 3

Canadian Electricity Exports to the United States in 1988
By Importing Region/State and Exporting Province
(Gigawatt hours)

To Region/State	From Province	Sales[a]
Maine	New Brunswick	3 091
Massachusetts	New Brunswick	1 915
	Quebec	279
	Total	2 194
New Hampshire	New Brunswick	43
Vermont	Quebec	1 789
	Ontario	401
	Total	2 190
New England[b]	Quebec	3 931
	New Brunswick	4
	Total	3 935
New York	Quebec	5 865
	Ontario	4 835
	Total	10 700
Michigan	Ontario	383
Minnesota	Manitoba	660
	Ontario	4
	Total	664
North Dakota	Manitoba	64
	Saskatchewan	1
	Total	65
Washington	British Columbia	1 067
Oregon	British Columbia	2 997
California	British Columbia	2 269
Other[c]	British Columbia	130
TOTAL		**29 728**

a Excludes exchanges.
b Exports are made to the New England Power Pool - the quantities to each state cannot be accurately determined.
c Includes Idaho, Montana, Nevada and Utah.

Oil and Gas Activity and Reserves

Exploration and Drilling Activity

Exploration and drilling activity in the Canadian oil and gas industry was higher in 1988 than in 1987. This increase was evident in the conventional areas of Canada and to a lesser extent in the frontiers.

The number of well completions increased from some 6 800 in 1987 to about 8 950 in 1988. There was an increase in the number of drilling rigs operating during the first three quarters of 1988, but drilling activity declined during the fourth quarter of 1988, primarily as a result of the mid-summer fall in oil prices.

Land sale results improved over 1987 in terms of the amount of land acquired but declined in terms of the unit price paid. During 1988, the provincial and federal governments sold the mineral rights to 3.7 million hectares, the second highest annual total this decade and an increase of some 25 percent over the 2.9 million hectares sold in 1987 (Figure 13). The price per hectare which industry paid to acquire these rights fell during 1988, from an average of $234 per hectare in the first quarter to $129 per hectare in the last quarter. On an annual basis, the average price per hectare in 1988 was $177, compared to $269 and $131 per hectare in 1987 and 1986 respectively (Figure 14).

Geophysical activity in 1988 was slightly above that in 1987. The average number of crews operating each month for the period January 1986 to December 1988 is shown in Figure 15.

Oil and Gas Reserves

The Board's estimate of remaining established reserves of conventional crude oil as of 31 December 1987 is 705.5 million cubic metres, 25.3 million cubic metres less than the estimate for year-end 1986.

Initial (before production) established reserves of conventional crude oil increased 45.7 million cubic metres through discoveries, extensions to reserves, and revisions to previous estimates.

The Board does not include oil discovered in the frontier regions in its established reserves estimates because of uncertainty as to their economic viability, even though small deliveries of crude oil have been made by tanker from the Bent Horn field in the Arctic Islands and from the Amauligak field in the Beaufort Sea.

Figure 13
Land Sales

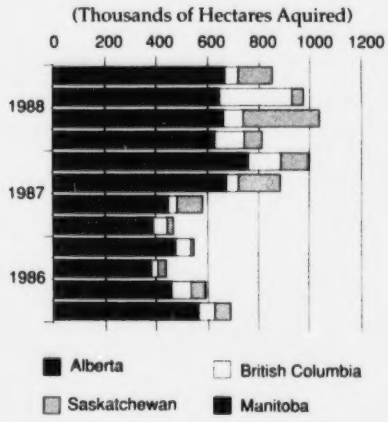


Figure 14
Land Sales

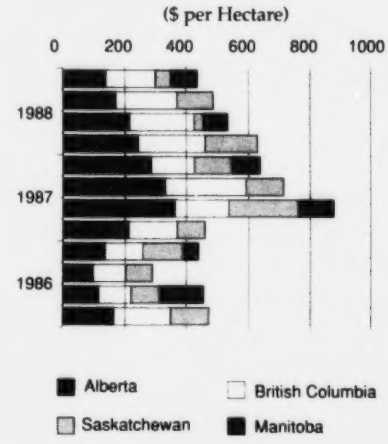


Figure 15
Geophysical Activity — Canada

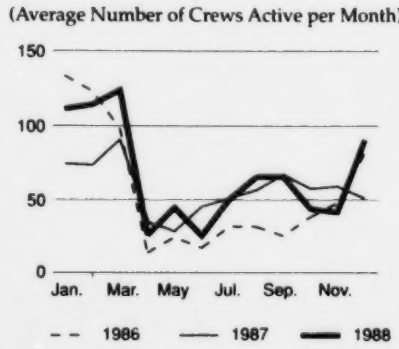
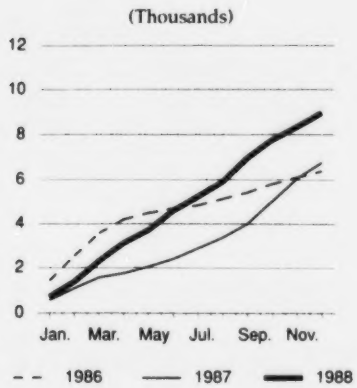


Figure 16
Canadian Well Completions



The Board's estimate of remaining established reserves of marketable natural gas in the conventional producing areas as of 31 December 1987 is 72.0 exajoules, 3.3 exajoules lower than the estimate for year-end 1986.

Initial established reserves of natural gas decreased 0.5 exajoules, although in volumetric terms they increased slightly. The reason for the decrease in the reserves expressed in exajoules was that lower estimates of the heat content of the gas were adopted, based on new data prepared by the Alberta Energy Resources Conservation Board to reflect the installation of facilities which remove natural gas liquids from the gas.

Figure 17
Canadian Rig Activity

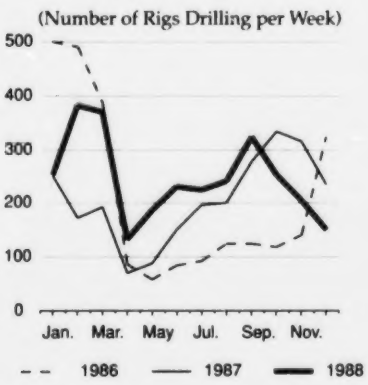


Table 4
Estimated Established Reserves of Conventional Crude Oil at 31 December 1987
(Millions of Cubic Metres)

	Initial	Remaining
British Columbia	84.7	17.9
Alberta	2 120.7	539.0
Saskatchewan	458.4	111.9
Manitoba	35.0	9.4
Southern Yukon and Northwest Territories	35.2	26.6
Ontario and Other Eastern Areas	10.4	0.9
Total for Canada	2 744.3	705.5

Note: The numbers on this table have been rounded.

Table 5
Estimated Established Reserves of Marketable Natural Gas at 31 December 1987
(Exajoules)

	Initial	Remaining
British Columbia	16.0	8.4
Alberta	114.0	60.7
Saskatchewan	3.5	2.1
Southern Yukon and Northwest Territories	0.5	0.3
Ontario and Other Eastern Areas	1.5	0.4
Total Conventional Areas	**135.5**	**72.0**
Mackenzie Delta	5.6	5.6
Arctic Islands	12.0	12.0
Total for Canada	**153.1**	**89.6**
(Total for Canada in Billions of cubic metres)	3 961.2	2 319.7

Note: The numbers on this table have been rounded.

Figure 18
Crude Oil
Reserves Additions vs Production

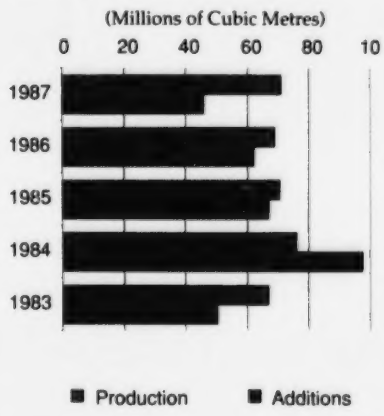
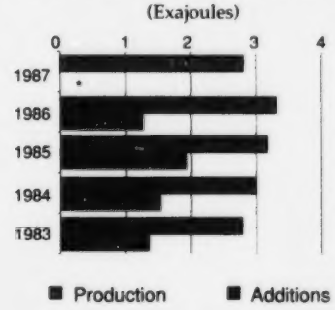


Figure 19
Natural Gas
Reserves Additions vs Production



*In 1987, reserves additions amounted to 0.3 billion cubic metres, but total initial reserves when expressed in exajoules declined by 0.5 exajoules.

The Year at

Oil

- *issued 125 orders for short-term exports (up to 12 months for light crude and petroleum products and 24 months for heavy crude); orders do not limit the volume exported but permit the Board to monitor export volumes and prices*

Natural Gas

- *authorized Pan-Alberta Gas Ltd. to export 59.7 billion cubic metres (2.1 trillion cubic feet) of natural gas over a 24-year period and Canadian Hunter Exploration Ltd. to export 3.4 billion cubic metres (120 billion cubic feet) over 20 years*
- *heard applications by Dome Petroleum Limited, ProGas Limited, Western Gas Marketing Limited and Alberta and Southern Gas Co. Ltd. to export natural gas to the United States*
- *received applications from Western Gas Marketing Limited and ProGas Limited to extend the terms of their licences, from Esso Resources Canada Ltd., Shell Canada Ltd., and early in 1989, from Gulf Canada Resources Limited, to export Mackenzie Delta gas, and from some eight companies to export natural gas using the TransCanada pipeline*
- *approved 91 orders for short-term (up to 24 months) exports[1]; orders do not limit the volume exported but permit the Board to monitor export volumes and prices*
- *approved 22 orders for short-term (up to 12 months) imports[2], authorizing the import of about one billion cubic metres (35.3 billion cubic feet) of natural gas in 1988 and 1989; approved one long-term import order*
- *approved one order directing TransCanada to transport up to 51 thousand cubic metres (1.8 million cubic feet) per day during a twelve-month period commencing 1 November 1988*

Electricity

- *received a request from the Minister asking the Board to identify and examine adequate measures to permit interprovincial trade in electricity to grow, to encourage greater cooperation between utilities and to give buyers and sellers commercial access to transmission capacity across intervening provinces*
- *issued a memorandum of guidance informing interested parties of the steps that will be followed to implement the new export policy announced by the Minister in September*
- *approved the export by Hydro-Québec of 70 terawatt hours of firm energy over a 10- to 14-year period to New England Utilities*
- *authorized Maine and New Brunswick Electrical Power Company to export 37 megawatts of firm power and 200 gigawatt hours of energy per year over 20 years to Maine Public Service Company*
- *authorized Hydro-Québec to export 50 megawatts of firm power and 438 gigawatt hours of firm energy per year to the Vermont Joint Owners over a 32-month period*
- *renewed 16 orders for a small quantity of border accommodation exports (to American customers served solely by Canadian utilities)*
- *issued 14 orders for short-term (up to 36 months) exports of electrical energy, authorizing the export of approximately 1280, 1970, 700 and 65 gigawatt hours during the years 1988 to 1991, respectively*

Energy Studies

- *published Canadian Energy, Supply and Demand: 1987-2005, the third in a series of staff studies issued every two years, containing projections of the supply and demand of the major energy commodities: electricity, oil, natural gas and coal, and their by-products*
- *issued Natural Gas Market Assessment, 1988, the first of a series of staff studies to be published from time to time, providing an assessment of the functioning of the Canadian natural gas market and a review of the short-term outlook for the supply and demand for Canadian natural gas*

Pipelines

- *approved two major expansions, estimated to cost $713 million, of the TransCanada PipeLines Limited system to increase deliveries to the domestic market*

1 Excludes orders for export and re-import of Canadian gas.
2 Excludes orders for import and re-export of American gas.

a Glance

in eastern Canada and to export markets in the northeastern United States

- *approved an expansion of the Trans Mountain Pipe Line Company Ltd. system in Alberta and British Columbia to transport increased volumes of heavy crude oil*

- *approved construction of three new international pipelines: St. Clair Pipelines Ltd., Shell Canada Products Limited, and Novacorp International Pipelines Ltd., crossing the international boundary in southwestern Ontario*

- *issued, after extensive consultation with industry, new Onshore Pipeline Regulations providing for the safe design, construction, operation, and abandonment of oil and gas pipelines; also developed, in consultation with industry, and issued for comment a draft of new Offshore Pipeline Regulations, based on the standards of the Canadian Standards Association*

- *continued to work closely with industry on the review of recommendation 5.9 (relating to the inspection and testing of certain pipeline welds) and considered other recommendations designed to enhance pipeline safety, contained in the Board's 1986 report following an investigation of a fatal accident in 1985 on the Interprovincial pipeline near Camrose, Alberta*

- *issued new streamlined Pipeline Crossing Regulations which define the responsibilities of an individual when excavating or constructing across federally regulated pipelines (Part I) and the related responsibilities of the pipeline companies (Part II); Board approval for those activities is no longer required, provided the pipeline company concurs with the proposed excavation or construction*

- *issued an order eliminating the requirement for prior Board approval for the construction of pipelines across roads and utilities*

Toll Regulation

- *held a hearing on toll design and tariff issues on TransCanada PipeLines Limited*

- *authorized Foothills Pipe Lines (Yukon) Ltd. to introduce interruptible service on the Saskatchewan portion of its pipeline system*

- *approved new tolls for Trans Québec & Maritimes Pipeline Inc. effective 1 January 1989 and 1 January 1990*

Legal Actions

- *Federal Court of Appeal held that a six-kilometre pipeline proposed to be built by Cyanamid Canada Pipeline Inc. in southwestern Ontario fell within provincial rather than federal jurisdiction; a further appeal by Cyanamid to the Supreme Court of Canada is pending*

- *Federal Court of Appeal dismissed an application by Manitoba Oil and Gas Corporation for leave to appeal the Board's denial of the company's application for an order requiring TransCanada to transport natural gas for it*

- *Federal Court of Appeal dismissed an application by the Corporation of the District of Burnaby for leave to appeal the Board's decision authorizing Trans Mountain to expand its pipeline system in Alberta and British Columbia, including the installation of three new storage tanks at Burnaby.*

Regulatory Process

- *concluded extensive consultations with interested parties on steps that might be taken to improve and streamline the regulatory process, and published a report setting out its current position with respect to suggestions received from interested parties*

Organization and Administration

- *Governor in Council extended by one year John R. Jenkins' term as a Member and appointed two Temporary Members, David B. Smith for three years and Kenneth W. Vollman for one year*

- *Jacques Farmer, Member, retired after 14 years' service at the Board*

- *completed a feasibility study on recovering the costs of regulation from regulated companies; Board is drafting regulations for future consultation with industry*

- *provided advice on the changes to its Act and regulations necessary to implement the Free Trade Agreement*

Board Activities

...included 13 hearings from Vancouver to Saint John and applications relating to pipeline additions, environment, land matters, and financial regulation; oil, gas and electricity exports; and energy studies.

Hearings and Inquiries

During 1988, the Board conducted all or part of 13 hearings in locations from Vancouver, British Columbia to Saint John, New Brunswick, for a total of 125 hearing days.

This section summarizes the major decisions issued following public hearings and provides information on other applications before the Board during 1988.

Natural Gas Exports

Pan-Alberta Gas Ltd. - Extension of Licence

By application dated 21 May 1987 and amended in December 1987, Pan-Alberta applied for an extension of Licence GL-96 from 31 October 1996 to 31 October 2012 and an increase of 45.6 billion cubic metres (1.6 trillion cubic feet) in the total quantity authorized under the term of the licence. This licence allows the export of natural gas to Pacific Interstate Transmission Company for sale to the California market.

The Board held a public hearing in Calgary in March 1988 and released its Reasons for Decision in July. The Board decided to revoke the existing licence, effective 31 October 1988, and to issue a new licence, GL-106, authorizing the export of 59.7 billion cubic metres (2.1 trillion cubic feet) of natural gas over the 24-year period, 1 November 1988 to 31 October 2012. This was the first decision under the market-based procedure which the Board adopted in 1987 for use in considering natural gas export licence applications.

Canadian Hunter Exploration Ltd. - Licence

In an application dated 5 May 1988, Canadian Hunter requested authorization to export up to 3.4 billion cubic metres (120 billion cubic feet) of natural gas over a 20-year period, beginning in July 1990. The natural gas would be sold to Gas Alternative Systems

Inc. of New York and would be used to supply a new cogeneration facility to be built in Syracuse, New York.

The Board held a one-day public hearing in Calgary in August and released its Reasons for Decision in September 1988 approving the requested licence.

Dome Petroleum Limited - Licence

By application dated 28 July 1988, Dome applied for a licence to export a total of 1.504 billion cubic metres (53 billion cubic feet) of

Highlights of the Pipeline Companies Under National Energy Board Jurisdiction

	1988 Rate Base[1] ($000,000)	1988 Revenue Requirement ($000,000)	Length (Including Loops) (km)	1988 Actual Throughput
Group 1[2] Gas				**($10^6 m^3$)**
Alberta Natural Gas Company Ltd	16	26	172	14 622
Foothills Pipe Lines (Yukon) Ltd.	698	179	849	11 660
Trans Québec & Maritimes Pipeline Inc	383	72	341	2 576
TransCanada PipeLines Limited	2 567	914	10 675	36 782
Westcoast Energy Inc.	818	276	4 514	9 213
Group 1 Oil				**($10^3 m^3$)**
Cochin Pipe Lines Ltd.	52	28	1 125	3 667
Interhome Energy Inc.	675	269	6 652	83 046
Interprovincial Pipe Line (NW) Ltd.	319	76	868	1 789
Trans Mountain Pipe Line Company Ltd.	85	57	1 328	10 317
Trans-Northern Pipelines Inc.	47	24	847	9 180
Group 2				
Total	N/A	N/A	3 160	N/A

1 Net plant or equivalent, including working capital.
2 Group 1 consists of the ten major pipeline companies. The remaining companies have been designated as Group 2 companies.
Sources: Preliminary estimates obtained from the pipeline companies.

natural gas over 13 years, beginning 1 November 1988, to Northern States Power Company. Dome currently exports under a short-term export order and wishes to convert the existing sale into a long-term arrangement.

The Board held a public hearing in Calgary in October 1988 and announced its decision in January 1989, approving the application.

ProGas Limited and Western Gas Marketing Limited - Licence

On 11 August 1988, ProGas and Western Gas Marketing, as agent for TransCanada PipeLines Limited, filed applications to vary their existing licences or to have new licences issued to serve Phase II of the Ocean State Power project, a combined cycle generating plant, to be constructed in Burrillville, Rhode Island.

ProGas proposes to export 5.17 billion cubic metres (186 billion cubic feet) over a 20 and a half year period, beginning 1 May 1991. These quantities were previously authorized for export pursuant to Licence GL-81 and do not represent incremental export volumes.

Western Gas Marketing proposes exporting 5.4 billion cubic metres (196 billion cubic feet) over 21 and a half years, also beginning May 1991. The volume requested was previously authorized for export under Licence GL-90.

A public hearing to consider both applications was held in October 1988.

The decision, approving the applications, was announced in January 1989.

Alberta and Southern Gas Co. Ltd. - Extension of Licence

In November 1987, Alberta and Southern applied to vary Licence GL-99, which authorizes the export of natural gas to Pacific Gas Transmission for resale to Pacific Gas and Electric Company in northern California. The company asked for a 16-year extension of the term of the licence, from 1994 to 2010, and an increase of 169.3 billion cubic metres (6.0 trillion cubic feet) in the total volume to be exported. This application supersedes an application made by the company in 1985.

The Board held a public hearing in Calgary in December 1988 and expects to release its decision in the spring of 1989.

Licences In Support of the TransCanada 1989 Facilities Application

During 1988, the Board received a number of applications for new export licences or amendments to existing licences. These licences would support the facilities requested by TransCanada in an application dated 28 July 1988 for approval to expand its pipeline system in Saskatchewan, Manitoba, Ontario and Quebec. (Please see *Pipeline Facilities* section.)

Details of the applications follow.

a. Canterra Energy Ltd., dated 13 September 1988
Norcen Energy Resources Ltd., dated 14 September 1988
Poco Petroleums Ltd., dated 15 September 1988
Shell Canada Ltd., dated 14 September 1988
Western Gas Marketing Limited, dated 15 September 1988

The companies are proposing to export a total of up to 22 billion cubic metres (0.77 trillion cubic feet) of natural gas to the Consumers Power Company and Midland Cogeneration Venture Limited Partnership of Michigan. The exports would take place at Emerson, Manitoba over a 16-year period between 1988 and 2005.

b. Vector Energy Inc., dated 29 August 1988

Vector proposes exporting up to 380 million cubic metres (13.4 billion cubic feet) per year over a 20-year period between 1989 and 2009. The gas would be sold to Altresco Inc. of Denver, Colorado, for a proposed cogeneration facility in Pittsfield, Massachusetts.

c. Direct Energy Marketing Limited, dated 12 October 1988

Direct Energy plans to export up to 936 million cubic metres (33 billion cubic feet) over 15 years, beginning November 1989. The gas would be sold to Consolidated Fuels, which would use the gas to fuel the Arrowhead cogeneration facility to be constructed in East Georgia, Vermont. Direct Energy requested in January 1989 that consideration of its application be deferred.

The Board held a public hearing on these applications in Calgary in January 1989.

Western Gas Marketing Limited/ProGas Limited - Extension of Licences

The Board received applications from Western Gas Marketing, dated 16 September 1988, and ProGas, dated 28 October 1988, to export natural gas to the United States.

Western Gas Marketing requested that the term of its Licence GL-83, which authorizes natural gas exports to Boundary Gas Inc., be extended from November 1996 to January 2003. The exports take place at Niagara Falls, Ontario.

ProGas requested that its Licence GL-98, which authorizes exports to four American interstate pipeline companies serving the American midwest and northeast, be extended by six years, from 1994 to 2000. The amendment would permit 33.48 billion cubic metres (1.18 trillion cubic feet) to be exported during the extended term of the licence.

The Board set these applications down for public hearing immediately following the conclusion of the hearing with respect to the applications supporting TransCanada's 1989 facilities application. (Refer to above application.)

Electricity Exports

Hydro-Québec - Export to New England Utilities

In August 1987, Hydro-Québec filed an application for a licence to export 70 terawatt hours of firm energy to New England Utilities for a period of 10 to 14 years starting in 1990.

This application was made following the denial by the Board of an earlier, similar application by Hydro-Québec on the grounds that the evidence presented by Hydro-Québec was insufficient to demonstrate

- that the energy proposed to be exported was surplus to reasonably foreseeable Canadian requirements for use in Canada; and

- that the export price was not less than the price to Canadians for equivalent service in related areas.

Hydro-Québec had failed to first offer the electricity to its neighbouring utilities in Ontario, New Brunswick and Newfoundland in accordance with the normal practice, and did not provide any other evidence sufficient to satisfy the Board that the energy proposed to be exported was surplus to Canadian needs and tnat the price was just and reasonable in relation to the public interest.

In its new application, Hydro-Québec stated that, in compliance with the Board's earlier decision, it had offered the energy proposed to be exported to directly interconnected Canadian utilities.

A public hearing into the application was held during December 1987. In January 1988, the Board released its decision to approve the requested licence.

Maine and New Brunswick Electrical Power Company - Export to Maine Public Service Company

By application dated 17 September 1987, Maine and New Brunswick Electrical Power Company requested a licence to export 37 megawatts of firm power and 200 gigawatt hours of energy in any consecutive 12-month period over a 20-year period to its parent company, Maine Public Service Company of Presque Isle, Maine.

The Board held a hearing in Saint John, New Brunswick in March and released its Reasons for Decision in June 1988 approving the requested licence.

Hydro-Québec - Export to the Vermont Joint Owners

By application dated 29 June 1987, Hydro-Québec requested a licence to export up to 50 megawatts of firm power and 438 gigawatt hours of firm energy to the Vermont Joint Owners for the period 1 March 1988 to 31 October 1990.

The Board held a public hearing on the application in January 1988 and released its decisions to grant the licence in the same month.

British Columbia Hydro and Power Authority - Extension of Licence

By application dated 10 August 1988, B.C. Hydro requested that the term of its Licence EL-162, issued in 1984, be extended beyond 30 September 1988. B.C. Hydro did not ask for any particular duration of the extension. Because of specific changed circumstances since the licence was first issued, the Board is considering the application as an application for review under subsection 21(1) (formerly subsection 17(1)) of the *Act*. The Board is also treating the application as a request for an extension to 30 September 1990, the date requested in the original 1983 application.

In order to allow sufficient time for the review to be conducted, the Board extended the termination date of the licence by six months, to 31 March 1989.

With respect to the conduct of the review, the Board decided to hold a hearing beginning 6 March 1989.

Hydro-Québec - Extension of Licence

By application dated 27 October 1988, Hydro-Québec requested an amendment to Licence EL-96 to extend the term of the licence by seven years, from 1991 to 1998.

In December the Board notified the company that the application would be treated as a request for a new licence and that a public hearing would be held. Hydro-Québec was also informed that additional information in support of its application would have to be filed.

Pipeline Facilities[1]

TransCanada PipeLines Limited - 1988/1989 Facilities and Toll Design

In June 1987, TransCanada PipeLines Limited filed an application, later revised several times, for approval to expand its pipeline system in central Canada in order to increase natural gas deliveries to Ontario, Quebec and to the northeastern United States.

The deliveries destined for the United States would be made under licences issued by the Board to Western Gas Marketing Ltd., ProGas Limited, KannGaz Producers Ltd., and the Alberta Northeast Gas, Limited consortium (ANE). ProGas' exports would be made to the Ocean State Power cogeneration project in Rhode Island. All exports would take place at Niagara Falls or Iroquois, Ontario.

The requested facilities, estimated to cost $335 million, included the construction of four sections of pipeline parallel to the existing pipeline, totalling 65 kilometres, near Niagara Falls and Sarnia, Ontario and St. Jean-sur-Richelieu, Quebec, and two sections of new pipeline, totalling 35 kilometres, near Hamilton and Iroquois, Ontario. The expansion also included the construction of new meter and compressor stations and the installation, relocation or upgrading of compressor units and aftercoolers.

TransCanada also requested that the present method of cost allocation and toll design for export sales and transportation services be applied to the cost allocation and toll design of the applied-for facilities.

A hearing on this application was held between November 1987 and February 1988.

1 Includes toll design, where applicable.

In a second application, dated 29 March 1988, TransCanada applied to advance from 1 November 1989 to a date as early as 1 November 1988 the construction of certain facilities which had been applied for in the June 1987 application, and to construct new facilities that had not been addressed in the earlier application. The new facilities included a 19-kilometre section of pipeline parallel to the existing pipeline near Cornwall, Ontario, and the temporary relocation of two portable compressor units. These facilities were estimated to cost $21 million. The new facilities and the earlier start-up dates were required to provide increased gas transportation service requested by The Consumers' Gas Company Ltd. and Gaz Métropolitain, inc..

On 31 May 1988, the Board issued its decision on those facilities required to be in service by 1 November 1988 and on the related toll and tariff matters. This decision was issued early in view of the timing constraints related to the 1988 construction season.

The Board approved the construction of three sections of pipeline parallel to the existing pipeline, totalling 49 kilometres, near Sarnia and Niagara Falls, Ontario and St. Jean-sur-Richelieu, Quebec, the installation of new aftercoolers, the upgrading of a number of existing compressor units, and the relocation of three other compressor units.

In view of concerns regarding financing and the timely and cost-effective construction of the Ocean State Power project, the Board also decided to give its assurance that it was prepared to recommend approval by Governor in Council of the facilities required to serve those exports.

A proposed 19-kilometre section of parallel pipeline near Cornwall was deferred until TransCanada had filed evidence that it had notified all affected landowners. After receiving this notification, the Board approved the construction of this section of pipeline in June 1988.

The Board's decision on the remainder of the project was issued in August 1988. The Board approved the construction of two sections of pipeline, 12.8 kilometres and 3.5 kilometres long, parallel to the existing pipeline near Niagara Falls and a 30.9-kilometre section of new pipeline near Hamilton. The Board also approved the installation of six compressor units in Manitoba and Ontario.

The Board decided not to recommend to the Governor in Council the issuance of a certificate for a 4.5-kilometre section of new pipeline near Iroquois and the installation of related compressors for the transport of natural gas to be exported by

Alberta Northeast Gas, Limited. The Board determined that the regulatory process in the United States would not be concluded in time to enable the American portion of the ANE/Iroquois project to achieve its projected start-up date of 1 November 1989.

The Board also decided that the toll methodology for the approved facilities would be the "rolled-in" method, as requested by the company, and that an additional toll would be collected from shippers requiring a delivery pressure above 4 000 kilopascals.

A number of decisions related to TransCanada's tariff were also made, including, with respect to access to the pipeline, the deletion of the "bumping" proviso and the establishment of an equitable "queuing" procedure. The Board also agreed with TransCanada's proposal to delete from its tariff the stipulation that additional facilities would not be built for the purpose of providing short-term firm service.

The Board also determined that, in moving towards deregulated natural gas markets, TransCanada was making progress in becoming an open access pipeline. However, as prospective shippers are entitled to know the conditions of access to a pipeline system prior to contract negotiations, the Board directed TransCanada to stipulate in its tariff *all* terms and conditions governing access to its pipeline system.

Subsequent to these decisions being made by the Board, TransCanada filed an application in July 1988 for new facilities to increase the capacity of its pipeline system to serve expanding domestic and export markets to a greater degree than proposed in the June 1987 and March 1988 applications. (See below)

On 9 June 1988, Cyanamid Canada Pipeline Inc. applied for a review of that part of the Board's 31 May 1988 decision that provides that renewal rights for contracts on TransCanada's pipeline system shall be subject to TransCanada's receiving written notice from the shipper not less than six months prior to the expiration of the contract or such lesser period as TransCanada may stipulate.

The Board denied the application in June 1988.

On 10 November 1988, Union Gas asked the Board to review its July 1988 decision on the facilities to be built by TransCanada. Specifically, Union requested that TransCanada be required to satisfy the Board that the construction of its Kirkwall Line near Hamilton, Ontario would not duplicate facilities already existing on the Union system. Union also requested that the certificate

issued to TransCanada authorizing the Kirkwall Line be amended by adding a condition requiring TransCanada not to begin construction until the Board disposes of Union's application.

On 17 November, the Board issued its decision, denying Union's application.

TransCanada PipeLines Limited - 1989/90 Facilities

TransCanada filed an application dated 28 July 1988 for approval to expand its pipeline system in Saskatchewan, Manitoba, Ontario and Quebec in order to increase its capacity to serve expanding domestic and export markets.

The expansion included the construction of 21 sections of pipeline, totalling 320 kilometres, parallel to the existing line, the installation of eight new compressors at existing compressor stations, the upgrading of five compressors, and modifications to three existing compressors.

TransCanada estimated the facilities would cost $555 million and stated they would be required by 1 November 1989 in order to meet the projected sales and transportation requirements of existing contracts and to provide new services in the domestic and export markets. The facilities would also provide advance capacity to accommodate new firm services expected in the future.

A hearing was held on this application in October and November 1988.

In December 1988, the Board issued its decision early with Reasons for Decision to follow in the new year.

Releasing of the decision early was to allow TransCanada to proceed with a cost-effective winter construction plan; to provide the necessary lead time for compressor and pipe procurement; and to address concerns regarding the financing requirements of the Northland Power and Ocean State Power projects.

Following Governor in Council approval, the Board issued three certificates of public convenience and necessity for the applied-for facilities. Furthermore, the Board indicated that it would recommend to the Governor in Council the revocation of Certificate GC-71 in respect of six 12.5-MW compressor units.

Trans Mountain Pipe Line Company Ltd. - Facilities and Toll Design

In September 1987, Trans Mountain filed an application for approval of a major expansion of its pipeline system in British Columbia and Alberta, the related toll design for the expanded system, and refinements proposed to the existing toll design.

The company proposed to carry out its expansion in two stages. The Stage 1 facilities were to allow Trans Mountain to transport increasing volumes of heavy crude oil while it continued to meet its commitments to supply light crude oil to Vancouver refineries and refined products to Kamloops. The applied-for facilities included additional tankage at Edmonton and Burnaby, two new pump stations, and extensive additions and modifications to seven existing pump stations. Trans Mountain projected that the facilities would be completed in late 1989, at a cost of some $57 million.

The Stage 2 facilities were to accommodate the possible shipment of other products, such as methanol or methyl tertiary butyl ether which is used to increase the octane level in motor gasoline. These facilities would be undertaken only when there is reasonable assurance that the shipments will materialize. The Stage 2 facilities, expected to cost some $27 million, include the construction of three new pump stations and the reactivation of two idle loops, each 762 millimetres in diameter, totalling 82 kilometres in length.

The hearing began in Vancouver in February 1988. That sitting lasted 10 days. Final argument was heard in Ottawa on 29 February and 1 March 1988.

The hearing was reconvened in Burnaby from 11 to 14 April 1988 in order to obtain evidence on the socio-economic and environmental concerns raised by certain intervenors. The record closed on 24 May 1988.

The Board issued its Reasons for Decision in August 1988, approving the Stage 1 facilities but not the Stage 2 facilities. (Please refer to *Legal Matters).*

The Board also approved Trans Mountain's proposal to include the capital and operating costs of the Stage 1 facilities in a common rate base and revenue requirement.

The Board also made a number of decisions on toll design, including the method to be used in determining capacity surcharges for heavy crude oil.

In September, the Burnaby Citizens for Environmental Protection requested the Board to review and stay its decision authorizing the expansion of the pipeline facilities.

The Board issued its decision in December, denying the application.

St. Clair Pipelines Ltd./TransCanada PipeLines Limited - Facilities

By application dated 15 June 1988, St. Clair Pipelines Ltd. requested approval to build a 700-metre pipeline under the St. Clair River near Sarnia, Ontario. The new pipeline would link the storage and transmission facilities of two pipeline companies, Union Gas Limited in Ontario and Michigan Consolidated Gas Company in Michigan. It would be 610 millimetres (24 inches) in diameter. In its application, St. Clair stated that the link would also increase accessibility to supplies of competitively priced American gas and provide access to Michigan Consolidated's underground storage facilities.

By application dated 25 August 1988, TransCanada PipeLines Limited filed an application as an alternative to St. Clair's proposal. TransCanada proposed to build a 3.3-kilometre loop of its existing pipeline near its connection to Union Gas.

Both applications were considered at a hearing held in September 1988.

The Board released its Reasons for Decision in November 1988. The Board approved St. Clair's application and denied TransCanada's application.

Tolls and Tariffs

TransCanada PipeLines Limited - 1988 Tolls

On 21 December 1987, TransCanada PipeLines Limited filed an application for 1988 tolls and at the same time applied for an interim toll order to be effective 1 January 1988. On 20 January 1988, the Board set the level of interim tolls at 10 percent below the 1987 level.

The Board informed TransCanada that the public hearing on the application would be held in two phases. Phase I would deal with toll design and tariff issues including self-displacement by distributors. Phase II would deal with cost of service issues and any remaining tariff matters.

Phase I of the hearing began on 16 May 1988 in Ottawa and ended 13 September, for a total of 54 sitting days. On 17 June, the Board

issued its decision on one issue considered at the hearing, the disposition of the balances in deferral accounts as of 31 December 1987 and related carrying charges. The Board decided that the balances, totalling a net credit of some $76 million, were to be applied to reduce the revenue requirement during the six-month period beginning 1 July 1988. Consequently, the Board reduced the new interim tolls by a further 30 percent, effective 1 July.

With the expiry of the credit arising from the deferral accounts by the end of 1988, the Board established new interim tolls to be effective 1 January 1989. The new tolls were 23 percent higher than the prevailing interim tolls and were based on TransCanada's 1989 forecast revenue requirement adjusted to reflect the last approved rate of return.

The Board released its decisions and Reasons for Decision on the remaining issues of Phase I on 5 January 1989. A key decision was the lifting of the prohibition on "self-displacement", that is, the transportation of any gas purchased by distributors to displace gas they were taking from TransCanada.

Phase II of the hearing began 9 January 1989 in Calgary.

Foothills Pipe Lines (Yukon) Ltd. - Tariff

In June 1987, Foothills applied for amendments to its natural gas transportation tariff to allow for the introduction of interruptible service. The Board held a public hearing in Ottawa during October 1987.

In December 1987, the Board approved a request from Foothills for an interim order permitting the company to establish interruptible service on the Saskatchewan segment of its pipeline system (Zone 9) at the rate and under the terms and conditions contained in its application. In January 1988, the Board released its Reasons for Decision authorizing Foothills to offer two tiers of interruptible service in Saskatchewan. The toll for Tier-1, having a higher priority than Tier-2, was set at $3.065 per thousand cubic metres per hundred kilometres based on 90 percent load factor, and the toll for Tier-2 at $2.759 based on 100 percent load factor.

Trans Québec & Maritimes Pipeline Inc. - Tolls

On 7 July 1988, TQM applied for new tolls for the transportation of natural gas for a two-year test period, effective 1 January 1989. TQM requested approval of a monthly toll of $5.945 million in 1989 and $5.858 million in 1990. The previously approved toll was $6.038 million. The company also requested a rate of return on equity of 14.5 percent in 1989 and 14.75 percent in 1990 based

on a deferred common equity ratio of 25 percent. In its application, TQM sought to have the common equity ratio increased to 30 percent effective November 1990. The previously approved rate of return on equity was 13.75 percent on a deemed equity ratio of 25 percent.

The oral portion of the hearing, which dealt with evidence on rate of return matters and which included argument and reply on all matters, was held in November. Evidence on issues other than rate of return was dealt with by written submissions.

In December, the Board released its decision with Reasons for Decision to follow in the new year. The Board authorized a monthly toll of $5.886 million commencing 1 January 1989 and a monthly toll of $5.776 million commencing 1 January 1990. The Board denied TQM's request for a higher rate of return and common equity ratio for both 1989 and 1990. The authorized return remains at 13.75 percent with a common equity ratio of 25 percent.

North Canadian Oils Limited - Access to Foothills Pipeline

By application dated 17 August 1988, North Canadian Oils requested the Board to issue an order under section 71(2) (formerly 59(2)) of the *Act*, requiring Foothills Pipe Lines (Yukon) Ltd. to provide firm service to North Canadian Oils on the Foothills pipeline system in Saskatchewan.

On 16 December, North Canadian Oils filed another application, under section 71(3) (formerly 59(3)) of the Act, for an order requiring Foothills to provide the necessary facilities to receive, transmit and deliver the gas offered by North Canadian Oils to Foothills.

A hearing on the applications began 13 February 1989.

Inquiries

Interprovincial Pipe Line Limited - Camrose, Alberta Accident

In late 1986, the Board commenced a review of its decision to adopt recommendation 5.9 made by the Board's panel which investigated a fatal accident in 1985 on Interprovincial's pipeline near Camrose, Alberta. The recommendation required pipeline companies under Board jurisdiction to remove all fillet welds[1] made on liquid filled pipelines in certain circumstances and to check the soundness of a sample of fillet welds in others.

1 A fillet weld is a type of weld necessary to attach a sleeve or fitting around a pipe.

On 22 July 1988, the Board informed industry that it agreed with a two-phase process of review suggested by industry. The first phase consists of a program of inspection or sampling with the intent of gathering evidence for the review. The evidence was due to be filed by the companies by 31 December 1988. The second phase will consist of a review of the recommendation in view of the new evidence; the Board has reserved its decision on whether to hold a public hearing for this purpose.

In a related matter, the Board invited industry to submit comments on the eleven other recommendations in the inquiry panel's report. On 22 January, 14 April and 22 July 1988, after having reviewed industry's comments, the Board made a number of decisions in respect of each of the other 11 recommendations, proposed amendments to the applicable Canadian Standards Association pipeline standards and is in the process of amending its Onshore Pipeline Regulations.

Other Board Activities

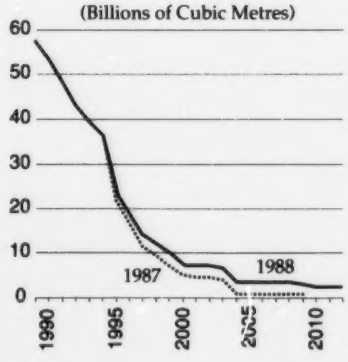
Oil

In 1988, 125 orders were issued for the export of crude oil and petroleum products. The Board receives monthly data from the industry on export volumes and prices for crude oil and petroleum products. The statistics are analyzed and compiled, and consolidated reports are issued to the industry and other interested parties. The Board also publishes annual reports for crude oil and petroleum products covering export activities for the year as a whole.

Natural Gas

The Board approved 91 short-term natural gas export orders in 1988. It also approved two[1] new licences and two licence amendments during the year (see Figure 20 and Gas Appendix 4).

Figure 20
Export Licence Authorizations at Year-End



During 1988, the Board ensured that natural gas export transactions complied with licence terms and approved contractual arrangements. It collected and published monthly data on export prices, sales, and associated transportation costs which were used by a committee of officials of federal and producing-province governments to assess export prices against domestic prices.

The Board published a new report assessing domestic natural gas markets (see *Energy Studies*).

1 New Licencce GL-106 amends and replaces Licence GL-96.

Propane and Butanes

During 1988, the Board continued to monitor exports of propane and butanes. In this connection, the Board authorized 43 short-term export orders for propane. Of these, two were issued to companies which became exporters for the first time, while three companies did not renew their orders. Butane export orders totalled 39, including two new exporters, but five companies allowed their orders to lapse.

Ethane

For purposes of export regulation, ethane is subject to the same criteria as natural gas. No licences or orders were issued for the export of ethane during 1988.

Electricity

New Electricity Export Policy

In September, the Minister of Energy, Mines and Resources announced a new policy regarding the regulation of electricity exports and international power lines. The objective of the new policy was to simplify and reduce regulatory requirements for electricity exports and international power lines.

Under the new policy, applicants will normally receive authorization for their proposal in the form of an NEB permit. A permit will not require a public hearing; nor will it require Governor in Council approval. However, if there is any reason to believe that the proposal may not be in the Canadian public interest, the Governor in Council, on the advice of the Board, may require that a public hearing be held.

Regulation by the government of Canada will concentrate primarily on those aspects of a proposal that may not have been sufficiently dealt with by provincial regulatory practices and procedures, in order to ensure specifically that:

- export and international power line proposals do not have unacceptable environmental or other impacts outside of the sponsoring province, and
- Canadians wishing to purchase electricity to serve their own domestic requirements are given fair market access to electricity at prices no higher than the price being offered to export customers for electricity being proposed for export.

The Minister asked the Board to implement this policy to the maximum extent consistent with the existing *Act* during the

transition period leading up to the time when new legislation comes into effect.

In December, the Board issued a memorandum of guidance informing interested parties of the steps that will be followed to implement the new policy.

Full implementation of the policy will require amendments to the *National Energy Board Act*. However, until the *Act* is amended, the Board proposed modifications to its rules and regulations. Since these amendments will take some time to implement, the Board decided to make a number of changes on its own immediately.

The memorandum of guidance specified the requirements and procedures for electricity exports and international power lines which are to be implemented in three phases.

Effective immediately, the information requirements for export licences and power line certificates were changed as follows:

- Detailed information requirements concerning surplus were replaced with the general requirement that exporters provide evidence to demonstrate that proposed exports are surplus to Canadian needs.

"Regulation by the government of Canada will concentrate primarily on those aspects of a proposal that may not have been sufficiently dealt with by provincial practices and procedures,..."

- Many of the Board's remaining information requirements for export applications were replaced with the requirements contained in the new electricity policy document.

- The Board adopted the fair market access concept of the new policy to assist it in satisfying itself that exports are in the public interest. If they wish, exporters will be able to comply with the second price criterion by indicating that they have adhered to the concept of fair market access instead of having to offer the electricity proposed for export to interconnected Canadian utilities. Until the regulations are changed, the first and second price criteria, which currently must be satisfied, will remain in place. However, as part of the package of amendments implementing the Canada-United States Free Trade Agreement, the third price criterion was recently revoked.

- The existing information requirements for certificates, set out in the NEB Rules of Practice and Procedure, were replaced

with the information requirements for international power lines contained in the electricity policy document.

When the amendments to the regulations are approved by the Governor in Council, as provided by the new policy, the Board will continue to use the fair market access policy to assist it in satisfying itself that exports are in the public interest.

A further change which will be implemented when the regulations are changed is the removal of any limit on the quantity of electricity which can be exported by order, without a public hearing, for periods of up to three years. At present, exports under order are limited to 60 000 kilowatts and 400 gigawatt hours, and for interruptible exports and exchanges, to 1000 gigawatt hours.

For full implementation, amendments to the *Act* will be required to provide for:

- the authorization of exports and of the construction and operation of international power lines by issuance of permits, without public hearings, unless applications are designated for licensing and certification by the Governor in Council,

- the process to be followed when exports and international power line applications are designated for licensing and certification,

- changes to detailed routing and land acquisition procedures for international power lines.

Interprovincial Trade in Electricity

In September 1988, the Minister of Energy, Mines and Resources asked the Board to identify and examine adequate measures to permit interprovincial trade in electricity to grow, to encourage greater cooperation between utilities, and to give to buyers and sellers of electricity commercial access to transmission capacity across intervening provinces.

At year-end the Board was considering how best to deal with this matter.

Other Electrical Activities

In February 1988, B.C. Hydro applied to the Board to review the Board's decision of July 1984 restricting the export of energy generated at the Burrard plant. Following a review, the Board

approved the application and amended certain conditions of Licences EL-162 and EL-163 that pertain to the operations of the Burrard plant.

During the year, the Board continued to act in its advisory role, informing the Minister of the status of electricity exports. The Board also continued to consult with and contribute to other government departments and industry groups in both Canada and the United States which coordinate the operation of electric power utilities throughout North America.

Board staff provided advice to assist Environment Canada - Parks in dealing with an application by Newfoundland and Labrador Hydro to construct a 138-kV transmission line in Gros Morne National Park in Newfoundland. Also, staff continued work and consultations with industry on its CANEBEX-5 computer model which calculates the economic benefits of economy energy transactions among up to five power systems.

Energy Studies

In December 1988, the Board released two major staff studies prepared as part of the ongoing monitoring of the energy scene for which the Board is responsible in connection with its regulation of energy exports and its advisory functions. One is *Canadian Energy Supply and Demand 1987-2005*, dated September 1988, which updates an earlier study published in 1986. The second is *Natural Gas Market Assessment*, dated October 1988, which is the first of a series which the Board will publish from time to time. It was announced in the July 1987 decision in which the Board adopted its market-based procedure for assessing natural gas export applications.

Canadian Energy Supply and Demand 1987-2005

This study projects the Canadian supply of all major energy commodities, including electricity, oil and natural gas, and their by-products, and the demand for Canadian energy in Canada and abroad. Board staff prepared preliminary assumptions and results, consulted with provincial governments, industry associations, companies and other interested parties, and, in light of these consultations, developed the projections used.

The analysis in the report was conducted under two scenarios of economic growth and energy prices. In the high case, economic growth averages about three percent per year and crude oil prices are assumed to increase to U.S. $30 (1987 dollars) per barrel by 2000 and remain unchanged in real terms after that. In the low case, economic growth averages only two percent per year and

crude oil prices increase much more slowly, to U.S. $20 (1987 dollars) per barrel by 2005.

The report states that prices are likely to fluctuate substantially from year to year but are unlikely to remain outside the projected range for sustained periods of time. It also notes that the actual path of oil prices could be a composite of the two projections, for example, close to the low path in the earlier years but drifting up over time toward the higher path.

The major findings of the study are:

- The projections of western Canadian natural gas and oil supply are both higher than in 1986, as is frontier oil supply. For the first time, frontier gas supply is included.

- The report projects that domestic energy demand will grow more slowly than economic growth as a result of continuing energy conservation and technological progress. The use of alternative energy forms including wood, wood wastes, and wind and solar power will also increase, but their share of total energy use declines marginally in both cases, given the relatively low prices of fossil fuels and electricity.

- While the report projects growing net exports of coal, electricity, natural gas, and natural gas liquids (propane, butanes and ethane), continued net exports of crude oil and oil products depend on economic growth and oil prices.

The report projects adequate natural gas supplies at higher prices and the need for substantial new electricity generating capacity. Continued net exports of oil depend on economic growth and oil prices.

- In both cases, Canada is projected to continue exporting heavy crude oil throughout the study period. In the high case, net exports of crude oil and oil products increase substantially, but in the low case, Canada needs large quantities of imported light crude oil and oil products.

- In both scenarios, natural gas supplies are adequate to meet increasing domestic requirements and also to provide for higher exports, but at increasingly higher prices. Fieldgate natural gas prices in Alberta are projected in the high case to more than double in real terms by 2005. Low case natural gas prices increase more slowly, to about 70 percent of the high case level projected for 2005.

- In spite of incentives to encourage users of electricity to reduce demand, the report projects the need for substantial construction of new electricity generating plants to meet both domestic and export demand. It expects a growing percentage of our electricity exports to be firm, rather than interruptible. The report also suggests that increased interprovincial cooperation could result in more hydroelectric development, displacing some nuclear and fossil fuel-fired generation.

- Coal production is projected to increase over the review period, as a result of increasing domestic demand for thermal generation of electricity, and higher coal export levels.

Natural Gas Market Assessment

This report provides both an assessment of the functioning of the Canadian natural gas market and a review of the short-term outlook for the supply and demand for Canadian natural gas.

The report describes in detail the structure and functioning of the Canadian natural gas market, focussing on the period since the Agreement on Natural Gas Markets and Prices was signed on 31 October 1985. The study makes a number of observations regarding changes that have occurred in the Canadian natural gas market since late 1985:

- Producers now have a wider range of market opportunities while end-users can choose from a wider variety of supply options.

"The report concludes that limited pipeline capacity may pose the most serious concern in the near term."

- The number of gas producers selling directly to end-users has increased dramatically. This has generated strong competition in some markets for natural gas, which, together with lower oil prices, has resulted in a large decline in wellhead prices.

- On average, Canadians have been paying prices generally no greater than those paid by export customers.

- High-volume industrial customers have received substantial price reductions over the past two years and have fully benefitted from competitive pricing at the wellhead.

- Prices to other end-users have fallen, but to a lesser extent.

- A degree of flexibility exists in the market today which, to many, was unthinkable just a few years ago.

With respect to the outlook for supply and demand, the report concludes that the excess supply that has characterized the market in recent years is diminishing. However, annual productive capacity will continue to exceed annual demand over the next few years, although the excess may be small on a peak day basis.

The report concludes that limited pipeline capacity may pose the most serious concern in the near term. Limited capacity on both the NOVA Corporation of Alberta pipeline and the central section of the TransCanada system could result in interruptions of service to customers relying on interruptible service. It may also limit opportunities for expanded export sales to most American markets in the near term. Service to residential and small commercial users, who rely on firm service, is expected to continue without interruption.

The report also provides considerable information on the evolution of the natural gas industry and the current status of regulation in Canada.

Pipeline Activities

The Board regulates 46 gas, oil and products pipeline companies. These pipeline systems are shown in Figures 21 and 22.

All new pipeline facilities must be authorized by the Board prior to their construction. The Board is responsible for monitoring the construction, operation and abandonment of pipeline facilities as well as protection of the environment to ensure compliance with the Board's safety and environmental regulations and any specific conditions of the approving order or certificate. In addition, the Board reviews construction and operation costs to ensure that tollpayers receive cost-efficient service. The orders and certificates issued during 1988 approving new pipeline facilities are listed in Oil and Gas Appendices 1, 2 and 3. Certificates are issued for new pipelines longer than 40 kilometres, if they are approved by the Board after it holds a public hearing, as required by the *Act*. All certificates must be approved by the Governor in Council.

During the past several years the Board has undertaken the task of reviewing, consolidating and improving the Oil Pipeline Regulations and the Gas Pipeline Regulations, which resulted in

Figure 21

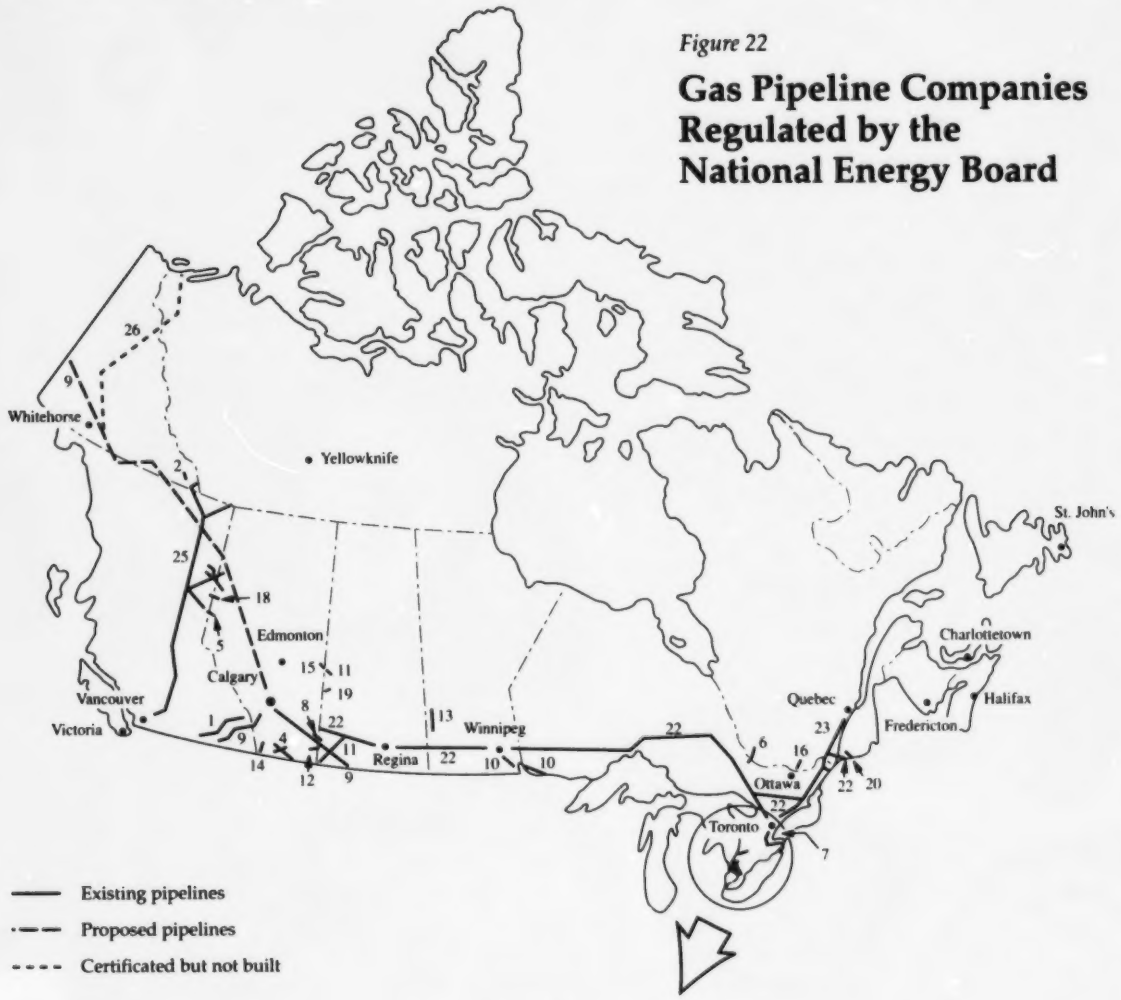
Oil and Oil Products Pipeline Companies Regulated by the National Energy Board

1. Aurora Pipe Line Company
2. Cochin Pipe Lines Ltd.
3. Dome Kerrobert Pipeline Ltd.
4. Dome NGL Pipeline Ltd.
5. Dome NGL Pipeline Ltd.
   Amoco Canada Petroleum Company Ltd.
6. Esso Resources Canada Limited
7. Interhome Energy Inc.*
8. Interprovincial Pipe Line (NW) Ltd.
9. Manito Pipelines Ltd.
10. Mont Resources Limited
11. Montreal Pipe Line Limited
12. Murphy Oil Company Ltd.
13. Northwest Transmission Company Limited
14. Petroleum Transmission Company
15. Polysar Hydrocarbons Limited
16. Sun Pipe Line Company
17. Trans Mountain Pipe Line Company Ltd.
18. Trans-Northern Pipelines Inc.
19. Wascana Pipe Line Ltd.
20. Westspur Pipe Line Company (1985) Inc.
21. Windsor Storage Facility Joint Venture
22. Yukon Pipelines Limited

* On 5 May 1988, Interprovincial Pipe Line Limited changed its corporate name to Interhome Energy Inc.. However, the pipeline operations are being conducted under the business name Interprovincial Pipe Line Company, a division of Interhome Energy Inc.

Figure 22

Gas Pipeline Companies Regulated by the National Energy Board



1. Alberta Natural Gas Company Ltd
2. Amoco Canada Petroleum Company Ltd. (abandoned)
3. A.P.R. Pipeline Company Ltd.
4. Canadian Montana Pipe Line Company
5. Canadian Hunter Exploration Ltd.
6. Champion Pipe Line Corporation Limited
7. Consumers' Gas (Canada) Limited
8. Dome Petroleum Limited
9. Foothills Pipe Lines (Yukon) Ltd.
10. ICG Transmission Holdings Ltd.
11. Many Islands Pipe Lines (Canada) Limited
12. Mid-Continent Pipelines Limited
13. Minell Pipeline Ltd.
14. Murphy Oil Company Ltd.
15. Newex Resources Ltd.
16. Niagara Gas Transmission Limited
17. Novacorp International Pipelines Ltd.
18. Peace River Transmission Company Limited
19. Saskatchewan Power Corporation
20. Shell Canada Products Limited
21. St. Clair Pipelines Ltd.
22. TransCanada PipeLines Limited
23. Gazoduc TQM*
24. Union Gas Limited
25. Westcoast Energy Inc.
26. Foothills Dempster Laterial (Corridor)

* In December, Trans Québec & Maritimes Pipeline Inc. informed the Board that it had changed its name to *Gazoduc TQM*.

the production of the new Onshore Pipeline Regulations. The process included a number of meetings with an industry consultative task force to ensure that industry views would be reflected in the new regulations. In August, the Governor in Council approved the Board's new Onshore Pipeline Regulations which came into effect on 1 September 1988. At the same time, the Board developed draft Offshore Pipeline Regulations which it issued to industry for comment in November.

"The Board has increased its participation in CSA activities so that it is now represented on some 23 committees, sub-committees and task forces."

The new Onshore Pipeline Regulations place a greater emphasis on the Canadian Standards Association (CSA) standards as the accepted criteria for the design, operation, maintenance and abandonment of oil and gas pipelines. Because of this, the Board has increased its participation in CSA activities so that it is now represented on some 23 committees, sub-committees and task forces. By participating in the review, revision and development of CSA standards, the Board ensures that its views are known when changes are proposed.

As part of the Board's regulatory responsibilities, the Board has been monitoring and reviewing the work of the Canadian Pipeline Industry Committee which was formed to review and comment on the findings of the Board's inquiry into the 1985 pipeline accident near Camrose, Alberta. The results of this work will lead to important revisions to the Board's Onshore Pipeline Regulations and the applicable CSA codes.

Routine Inspection

Since February 1987, the Board's inspectors have had the responsibility of administering and enforcing Part IV of the *Canada Labour Code* within the pipeline industry that is under the Board's jurisdiction. During the past year, the Board's inspectors visited 17 companies under the Board's jurisdiction and inspected a total of 236 facilities. Most of these inspections combined the Board's own facilities inspections with Labour Canada's workplace occupational safety and health inspections.

Pipeline Incidents

The Board requires detailed reports of all incidents involving personal injury or fatality, pipeline malfunctions such as leaks, breaks, fires, or explosions, or any other event which results in a loss of service of a pipeline under its jurisdiction. The Board

conducts public inquiries, as appropriate, to ascertain the cause of the incident and, when necessary, to establish specific measures to prevent a recurrence of that type of incident. These reports and inquiries are considered when revising pipeline safety and operational standards and regulatory requirements.

When a pipeline is damaged, the Board ensures that steps are taken to contain spills of hydrocarbons, to provide protection to the public and property, and to repair the damaged pipeline and return it to service as quickly as possible. The Board continues its surveillance of the site to ensure the effectiveness of the company's environmental rehabilitation program.

During 1988, the Board conducted various field inspections of pipelines incident locations to monitor the implementation of established emergency, safety and environmental protection procedures.

Table 6 shows the causes of pipelines incidents over the last five-year period. A total of 38 incidents occurred in 1988. One fatality was reported during the year.

Table 6
Causes of Pipeline Incidents 1983-1988

	1984	**1985**	**1986**	**1987**	**1988**
Defective Welds	4	5	0	3	3
Material Failures	10	4	5	4	7
Third Party Damage	5	6	3	8	6
Corrosion	6	5	10	8	4
Other	9	11	10	15	18
Total	**34**	**31**	**28**	**38**	**38**

Approvals

During 1988, the Board held public hearings to consider applications filed by TransCanada and Trans Mountain to expand their pipeline systems. Details are found under *Hearings and Inquiries*.

Westcoast received approval to construct the Umbach pipeline to connect natural gas reserves located in the Umbach area of northern British Columbia. This 20-kilometre gathering line is expected to cost $3.5 million. The Board also authorized Westcoast to build the 11.3-kilometre North Jedney Extension, expected to cost about $3.2 million. The extension will transport natural gas produced by Norcen Energy Resources Limited and

destined to be processed at Westcoast's Taylor Processing Plant. The Board also approved the purchase and construction of the Laprise off-load facilities, at a cost of about $14.9 million, to allow the diversion of 2.3 million cubic metres per day of raw gas from the Taylor complex to the Fort Nelson mainline, and the construction of the 8.4-kilometre, $1.4 million Redwillow Pipeline which will permit sour gas in the Thunder area to be gathered and delivered to the Pine River Processing Plant.

Shell Canada received approval to build a pipeline crossing under the St. Clair River near Corunna, Ontario. The pipeline will permit Shell to export natural gas liquids to Salmon Resources Ltd. via a new pipeline to be built by Salmon which will extend to the Consumers Power Company gas reforming plant in Marysville, Michigan. The Canadian portion of the pipeline, which will be approximately one kilometre long, will cost about $1.2 million.

In a decision issued in October 1988, the Board authorized St. Clair Pipelines to build a 700-metre pipeline under the St. Clair River near Sarnia, Ontario to link the storage and transmission facilities of two pipeline companies, Union Gas Limited in Ontario and Michigan Consolidated Gas Company in Michigan. This link will increase accessibility to competitively priced American gas supplies and provide access to Michigan Consolidated's underground storage facilities.

Newex received Board approval to construct two short pipelines across the Saskatchewan/Alberta border to carry natural gas from Newex's gas wells in Saskatchewan to the Many Islands pipeline in Alberta.

The sale of Consolidated Pipe Lines' 210-kilometre pipeline extending from the Saskatchewan/Montana border to the TransCanada pipeline near Herbert, Saskatchewan and the assignment of the Consolidated certificate and licence to Many Islands was approved by the Board.

In June 1988, the Board approved construction of Novacorp's 700-metre pipeline under the Detroit River near Windsor, Ontario. The pipeline would provide natural gas service to the manufacturing plant of National Steel Corporation in Detroit, Michigan, which is currently served by the local distributor, Michigan Consolidated Gas Company. The pipeline is estimated to cost about $1 million and would extend from the Ojibway meter station of Union Gas to a point on the international boundary. At year-end, the Board directed Union to construct connecting facilities at Ojibway.

In addition, the Board approved various other applications dealing with receipt or delivery facilities, pipeline replacements and modifications to existing pipeline facilities.

Environmental Matters

The Board is aware that the Canadian public has become increasingly concerned with the environmental implications of energy projects. Companies planning to construct and operate pipelines or power lines must act responsibly to minimize negative impacts and avoid extensive or irreversible damage to the land to be crossed. To ensure such responsible action, the Board audits all phases of project planning, construction and operation.

Of importance to that audit function is the environmental impact statement submitted by the company as part of a project application. The statement describes the proposed pipeline/power line corridor as it presently exists, the anticipated impact of the project on that corridor, and the procedures and measures to be implemented by the company to mitigate those impacts. The company's environmental impact statement is examined for completeness and accuracy in evaluating and assessing the impact of the proposed construction on the environment, and the measures to be implemented to mitigate those impacts.

"Companies planning to construct and operate pipelines or power lines must act responsibly to minimize negative impacts and avoid extensive or irreversible damage to the land to be crossed."

In addition, the Board ensures that, where negative effects on the environment cannot be avoided or mitigated, companies restore and rehabilitate the affected areas. Where there are impacts on the environment, the Board requires the development of an environmental issues list as a tracking system for those impacts. The list complements the environmental impact assessment process and provides a focus for environmental protection activity during all phases of project development and operation. During 1984/85, the Board, with input from the pipeline industry, developed the concept of having such a list prepared. Since that time, the environmental issues list has evolved to become a useful addition to the environmental protection process at the Board.

As part of the Board's environmental protection program, the Board inspects pipeline and power line construction sites to

ensure compliance with the companies' environmental protection procedures. In addition, companies constructing energy transmission facilities must submit post-construction monitoring reports documenting the recovery of the rights-of-way following construction and the deletion from or addition to the environmental issues lists.

The Board is responsible for ensuring that pipelines are operated and maintained in an environmentally acceptable manner. The Board's activities include periodic audits to monitor the condition of rights-of-way and inspections of pipeline incident sites to ensure that environmental protection and restoration measures are fully implemented. The Board conducts inspections of pipeline pump and compressor stations, which include noise surveys and inspections of hazardous materials handling and storage. The Board also monitors the operation of several gas plants operated by Westcoast, with particular emphasis on sulphur emissions and the discharge of effluents from waste treatment ponds.

In 1988, the Board carried out several environmental audits. Those included inspections of the 1988 pipeline construction carried out on TransCanada's system in southern Ontario and in Quebec near Montreal, and Manito's pipeline construction from Bodo, Alberta, to Cactus Lake, Saskatchewan. The Board found that the projects were being constructed in an environmentally acceptable manner, using proper mitigative and restorative techniques. The companies will monitor the rights-of-way next summer, submitting environmental monitoring reports in December 1989 and will be required to implement remedial action if that is deemed necessary.

Board inspectors also monitored the rights-of-way of recently completed projects. During the summer of 1988, that included Interprovincial's 1987 pipe replacements between Edmonton, Alberta, and Regina, Saskatchewan; Interprovincial's 1986 line 3 replacements in Saskatchewan and Manitoba; TransCanada's Ancaster looping operations in Ontario; and Westcoast's Sikanni pipeline in northeastern British Columbia. The annual overflight inspection of the IPL(NW) pipeline in the Northwest Territories and northern Alberta was conducted during the summer. The recovery of all rights-of-way inspected in 1988 continues satisfactorily with few environmental impacts resulting from the construction of the projects. Ongoing monitoring and surveillance programs will ensure that any future site-specific concerns will be addressed.

Under its periodic operational audit program, the Board carried out audits of Westcoast's facilities in southern British Columbia

and its by-pass in the Coquihalla Canyon and Interprovincial's Sarnia to Montreal pipeline. Westcoast's rights-of-way were being well-maintained; however, Interprovincial's right-of-way from Sarnia to Toronto had areas which indicated reduced crop growth. Due to the drought in southern Ontario in 1988, it was decided to conduct the audit again in 1989, under, hopefully, more normal weather conditions, before making a final evaluation.

Under the Board's program of periodic facilities inspections, the Board inspected Trans Mountain's Burnaby and Sumas tank farms, and the Westridge oil loading terminal. All of those facilities were well maintained. There is an occasional problem with nuisance odours from the Burnaby tank farm and the Westridge terminal during sour crude oil loadings. However, Trans Mountain is planning to construct three new storage tanks equipped with vapour treatment systems at the Burnaby tank farm for use in storing the more odourous crude oils. At Westridge, Trans Mountain completed the final design of a two-stage vapour treatment system. However, approval of the system must be obtained from the Canadian Coast Guard and the Vancouver Port Authority, and the shipping companies must agree to adapt their vessels to enable hook-up to the system.

With the new installations at Burnaby and Westridge, odour problems for residents living in the vicinity of those facilities should be greatly reduced or eliminated in the near future.

Five spill sites on Interprovincial's pipeline system in Alberta and one site in Manitoba were assessed for rehabilitation and restoration. All sites exhibited good restorative success.

"The Board requires the development of an environmental issues list as a tracking system for (environmental) impacts. The list complements the environmental impact assessment process..."

In addition, the Board conducted a post-construction audit of TransCanada's pipeline right-of-way in Ontario at the locations where Bell Canada had used the right-of-way to install its fibre optic cable system. Restoration of the disturbed portion of the pipeline right-of-way varied from fair to good. TransCanada will be requesting Bell Canada to implement further rehabilitation measures on those areas where restoration has not been satisfactory.

The Board continued to collect baseline data on noise emissions at pump and compressor stations, specifically at facilities in the rapidly urbanizing areas of southern Ontario. Trans Northern's pump stations at Oakville and Nanticoke and Interprovincial's stations at South Westover, North Westover, Bryanston, Keyser and Sarnia were surveyed.

In 1988, the Board initiated a program to monitor the use and storage of polychlorinated biphenyls (PCBs) and other hazardous substances at pipeline facilities under its jurisdiction. PCBs are found in oil drained from electrical equipment that has been removed from service, not in the product being transported by the pipeline. The purpose of the monitoring program is to ensure that companies under the Board's jurisdiction take all necessary precautions to protect human health and safety and the environment when using, handling and storing hazardous substances. The program requires companies to provide the Board with an inventory of PCBs in use and in storage at their facilities. In addition, companies were requested to ensure that all PCB storage sites comply with the relevant legislation, and that contingency plans are in place to deal with any incident involving PCBs. Companies were also requested to inform the Board of their plans for the disposal of PCBs. Preliminary information indicates that a total of 392 litres of PCB-contaminated oil are being held by pipeline companies, under satisfactory storage conditions, awaiting disposal.

In 1989, the Board will expand its environmental audit program to include any inspections necessary to ensure that PCBs at NEB-regulated facilities are being used and stored safely. The Board will also ensure, in cooperation with the companies, that other hazardous substances which may be found at their facilities are managed in a way which protects human health and safety and the environment.

Third Party Crossing Matters

All construction affecting pipelines regulated by the Board required its approval until 17 October, the date on which the new Pipeline Crossing Regulations were approved. During the year 806 applications relating to pipeline crossings or right-of-way infringements were approved by the Board.

As a result of the new regulations, regulated pipeline companies may now grant permission to third parties proposing to carry out construction activities affecting pipelines. Proposed activities must meet the conditions set out in the regulations and construction standards ensuring the safety of the public and pipelines. The Board will become involved in crossing approvals

only where a dispute arises between the third party and the pipeline company.

In 1988, the Board conducted a number of random inspections of utility construction from Quebec to British Columbia. These inspections are designed to encourage safe construction practices near pipelines. Board inspectors also monitored the installation of fibre optic cables by Bell Canada adjacent to TransCanada's pipeline in Ontario and by B.C. Telephone Company near the Trans Mountain and Westcoast pipelines in British Columbia.

Since the approval of the regulations, the Board has investigated four violations of regulations by third parties. The objective of these investigations is to prevent a recurrence of such violations. The Board is assisting the individuals involved to appreciate the need to follow safe construction practices and is advising them on appropriate changes to their procedures.

"806 applications relating to pipeline crossings or right-of-way infringements were approved by the Board."

Detailed Route Procedures

The Board did not receive any applications in 1988 where the detailed route procedures concerning the crossing of private land by pipelines needed to be implemented; however, the Board exempted several projects from detailed route procedures where new lands were required. In each case, the applicant demonstrated that options or easements had been obtained on all necessary lands.

Native Land Claims

The Board continued its monitoring of the federal government's negotiations on the settlement of comprehensive native land claims north of 60°, which involve areas of proven and potential oil and gas reserves. Included are the Western Arctic Claim (Mackenzie Delta), the Council of Yukon Indians Claim (Yukon Territory), the Dene-Métis Claim (Mackenzie Valley), and the Tungavik Federation of Nunavut Claim (Eastern Northwest Territories and High Arctic).

Those claims are presently at various stages of completion. Their status is as follows:

1. The Western Arctic Claim - the Inuvialuit Final Agreement, proclaimed 25 July 1984;

2. The Dene/Métis Claim, agreement-in-principle signed on 5 September 1988;

3. The Council of Yukon Indians Claim, agreement on all outstanding issues concerning an agreement-in-principle reached on 8 November 1988. It is anticipated that an agreement in principle will be signed by the spring of 1989; and

4. Tungavik Federation of Nunavut, 23 sub-agreements toward an agreement-in-principle have been reached to date.

The Board was an observer at the negotiations and was an information source on those issues that may impinge on certain areas of the Board's jurisdiction.

Memoranda of Guidance

During 1988, two memoranda of guidance dealing with land matters were forwarded to all companies under the Board's jurisdiction. One dealt with the granting of exemptions from the filing of plans, profiles and books of reference and the possibility of detailed route hearings. The other addressed the requirements for service of notices for acquisition of lands.

In the first, the Board concluded that, where a company is proceeding solely under the auspices of section 58 (formerly section 49) of the *Act*, it is neither necessary nor appropriate for the company to seek exemptions from all stated sections. This originates from the Board's finding that certain sections of the *Act* are not applicable unless a certificate is in force.

The second memorandum explains the requirement that a pipeline company must serve a notice of proposed acquisition of lands upon all identifiable parties that have an interest (registered or otherwise) in any particular lands that the company proposes to acquire for its pipeline.

Financial Regulatory Matters

Under Part IV of the *Act*, the Board is responsible for ensuring that the transportation tolls charged by the pipelines under its jurisdiction are just and reasonable and that there is no unjust discrimination.

In 1988 there were 46 pipeline companies under the Board's jurisdiction, two of which own two pipelines each, for a total of 48. Of these, three pipelines are inactive. The remaining 45

operating gas and oil pipelines are classified as follows: Group 1 contains the ten major pipelines and Group 2 contains the remaining, smaller pipeline companies.

This grouping of the pipeline companies, introduced by the Board in 1986, was aimed at tailoring the need for financial regulation in proportion to the degree of public interest. While the Board may undertake on its own initiative a review of the tolls of any company under its jurisdiction, the tolls of the Group 2 companies are normally reviewed only on receipt of a complaint. Otherwise, the monitoring of the Group 2 companies consists primarily of reviewing their annual financial performance.

For Group 1 companies, the monitoring process consists of the review of quarterly surveillance reports filed by the companies and the periodic audit of their operations.

The regulation of the tolls and tariffs of three of the Group 1 companies, Alberta Natural Gas, IPL(NW) and Cochin, has been done on a complaint basis since 1987, to reduce the regulatory burden. The Board actively regulates the tolls and tariffs of the remaining seven, either through the public hearing process, or through toll adjustment procedures based on written proceedings.

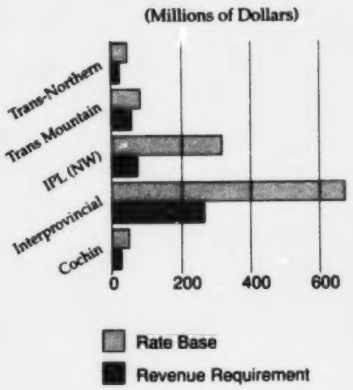
During 1988, non-hearing toll adjustment proceedings were completed for Trans-Northern, and initiated for Trans Mountain and Interprovincial.

In late 1987, the Board decided that Trans-Northern's level of earnings was too high and, effective 1 January 1988, placed the company's tolls on an interim basis pending a review. As a result of that review, the Board lowered the company's tolls by an average of nine percent.

In late 1988, Interprovincial applied for an adjustment of its tolls for 1989, based on anticipated increases in throughput and in operation and maintenance expenses. The Board expects to approve new tolls early in 1989.

The need for new tolls for Trans Mountain arose in part because of the Board's approval in July 1988 of a $56 million expansion of the company's system. At the Board's suggestion, Trans Mountain held meetings with industry representatives prior to filing its application in an attempt to negotiate a settlement on some of the issues. The Board expects to have new tolls in place early in 1989.

Figure 23
Group 1 Oil Pipelines
Rate Base and Revenue Requirement



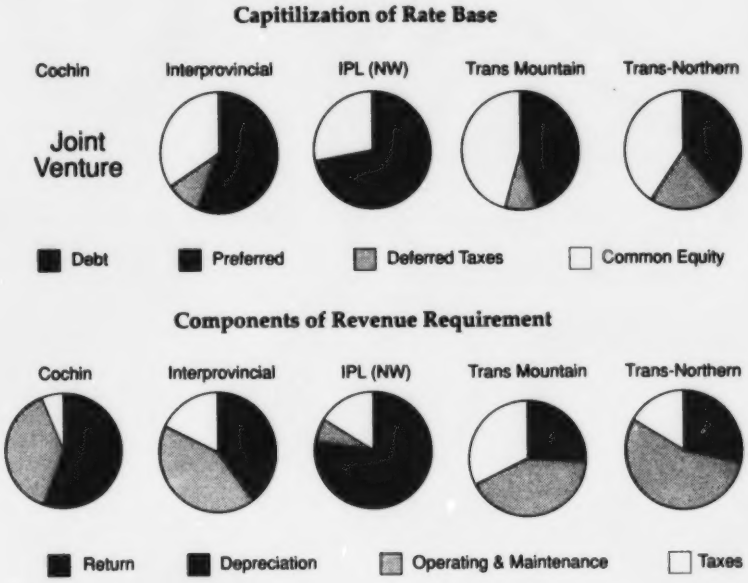
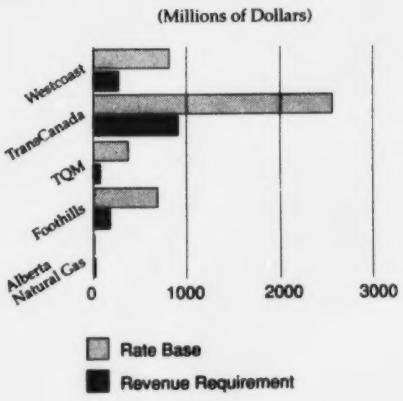
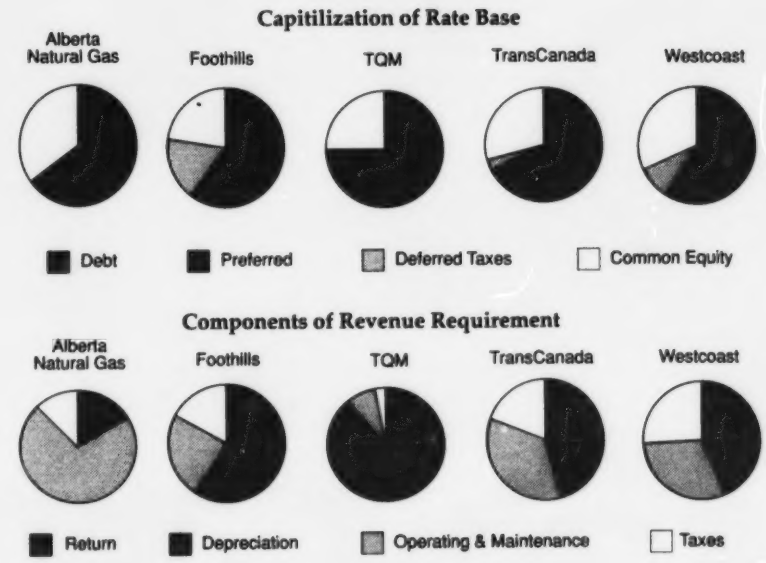


Figure 24
Group 1 Gas Pipelines
Rate Base and Revenue Requirement





Reference: Financial Regulation Appendix 1

Because the Board established tolls for Westcoast applicable to both the 1987 and 1988 test years in its 1987 decision, which was a regulatory first for the Board, no toll application was filed in 1988. Nevertheless 1988 was an eventful year for the company. In June, Westcoast's largest customer, Northwest Pipeline of Washington, declared itself an open access carrier under a provision of the regulations of U.S. Federal Energy Regulatory Commission. This action gave Northwest's customers the option to convert from being long-term buyers of gas from Northwest to being shippers of their own gas. Because many of its customers opted to switch, Northwest declared force majeure in the fall of 1988, and in effect suspended its obligations vis-à-vis Westcoast. As a result of this development, Northwest has filed an application with the Board for a number of regulatory actions which the Board is currently considering.

Inland Natural Gas requested the Board in November 1987 to reconsider its Order MO-3-87 which directed Westcoast to provide transportation service to Northwood Pulp and Timber Limited. Having considered the submissions of interested parties, the Board denied the application in January 1988.

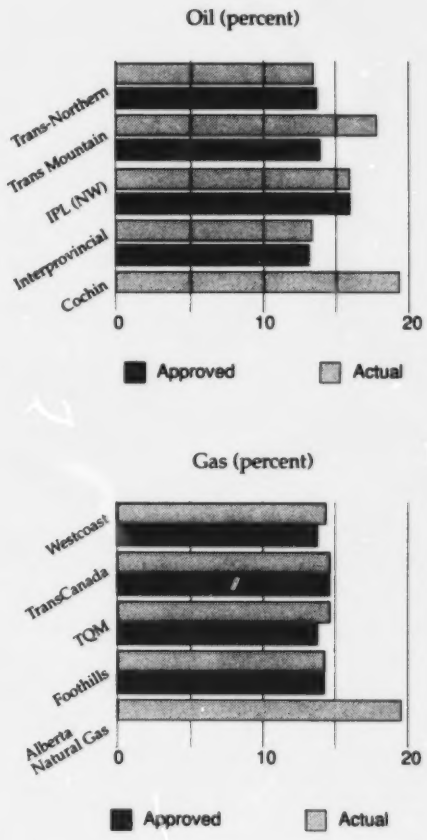
For a number of years, Foothills has included a special charge in its tolls. This charge comprises the return on, and amortization of, preliminary expenditures related to the Canadian mainline portion of the Alaska Natural Gas Transportation System which is as yet unbuilt. The authority to levy the charge expired on 31 October 1988. After soliciting comments from interested parties, the Board decided to allow Foothills to continue to include in its tariff a provision for the special charge for a further four years.

During 1988 the Board held public hearings for the consideration of the tolls and tariffs of TransCanada and TQM. Details are found under *Hearings and Inquiries*.

The 1988 financial data for these companies are shown in Figures 23 and 24. The 1988 approved and actual rates of return on equity for the Group 1 pipeline companies are illustrated in Figure 25.

The Board has responsibility under the *Energy Administration Act* for the collection of oil export charges. Although the charges on crude oil and bulk petroleum product exports were reduced to zero in 1985, some activity remained in the areas of collection and write-off of outstanding assessments.

Figure 25
Group 1 Companies
Rate of Return on Common Equity



Reference: Financial Regulation Appendix 1

Legal Actions

Cyanamid Canada Pipeline Inc.

On 6 April 1987, Cyanamid applied for a review of the Board's December 1986 decision that the Board had jurisdiction over a short pipeline to be constructed by Cyanamid from its plant at Welland, Ontario, to the TransCanada pipeline at Black Horse Station. In view of a judgment in March 1987 of the Divisional Court of the Supreme Court of Ontario, which had confirmed the exclusive jurisdiction of the Ontario Energy Board over typical by-pass pipelines in Ontario such as Cyanamid's proposed facilities, Cyanamid also requested that the question of jurisdiction be referred to the Federal Court of Appeal to confirm federal jurisdiction over its proposed facilities. In April 1987, the Board decided to proceed with the review and to refer the issue of jurisdiction to the Federal Court of Appeal.

On 27 November 1987, the Federal Court of Appeal ruled that the Board did not have jurisdiction over the proposed Cyanamid facilities. Cyanamid then applied to the Supreme Court of Canada for leave to appeal the Federal Court of Appeal's decision. The application was heard by the Court on 25 April 1988. In a decision rendered from the bench, the Court granted leave to appeal.

Following the Ontario Divisional Court judgment, the Lieutenant Governor of Ontario brought a reference on the matter to the Ontario Court of Appeal. The reference was heard in October 1987 and the Court of Appeal rendered its decision in February 1988 affirming that by-pass pipelines similar to that proposed by Cyanamid fell within provincial jurisdiction. Cyanamid appealed the decision of the Court of Appeal of Ontario to the Supreme Court of Canada. It is anticipated that Cyanamid's two appeals before the Supreme Court of Canada will be heard together in the spring or summer of 1989.

Northridge Petroleum Marketing, Inc. and ENRON Canada Ltd.

In late June 1987, Northridge and ENRON applied to the Federal Court of Appeal for leave to appeal the Board's decision of 26 May 1987 concerning the complaints of Northridge and ENRON against TransCanada. Northridge and ENRON had complained about the tolls charged by TransCanada for gas sold under TransCanada's competitive marketing program agreements.

On 18 August 1987, the Federal Court of Appeal granted leave to appeal. Northridge and ENRON informed the Board in November 1988 that they intend to withdraw their appeals.

Manitoba Oil and Gas Corporation (MOGC)

On 18 November 1987, MOGC applied to the Federal Court of Appeal for leave to appeal the Board's decision of September 1987 which denied MOGC's application. MOGC had applied for the Board to order TransCanada to transport MOGC's natural gas. The Court heard the application on 20 April 1988 and rendered its decision from the bench, dismissing the application.

Corporation of the District of Burnaby

On 16 September 1988, the Corporation applied to the Federal Court of Appeal for leave to appeal the Board's July 1988 decision authorizing Trans Mountain to expand its pipeline system in Alberta and British Columbia, including the installation of three new storage tanks at Burnaby.

On 17 October, the Court heard the application in Vancouver and dismissed it.

Union Gas Limited

On 20 December 1988, Union Gas filed with the Federal Court of Appeal an application for leave to appeal the Board's November 1988 decision in which the Board denied an application by Union to review that part of the Board's July 1988 Reasons for Decision (GH-2-87) relating to the Kirkwall Line and for an order to vary Certificate GC-73 issued to TransCanada following the hearing held pursuant to GH-2-87.

In its November 1988 Reasons for Decision, the Board indicated that it was of the view that the Union application was tantamount to a request to suspend the certificate issued to TransCanada, a request that the Board was not empowered to entertain except under the circumstances set out in section 56 (formerly section 47) of the *Act*, namely, if the holder of the certificate consents to such a suspension or has breached any term or condition attached to the certificate.

The applicant has argued that the Board erred in law in determining that it had no jurisdiction to hear the applicant's motion under either subsection 21(1) or subsection 21(2) (formerly subsections 17(1) and 17(2)) of the *National Energy Board Act*.

It is not known when the Application for Leave to Appeal will be dealt with by the Court.

Legislation and Regulations

... includes changes to the Act and Regulations under which the Board operates.

The following section outlines changes that were made during 1988 to the Act, Regulations, and Rules under which the Board operates. The Board's quarterly regulatory agendas provide additional detail on this subject.

Onshore Pipeline Regulations

The Onshore Pipeline Regulations came into effect on 1 September 1988 and combined and replaced the Oil Pipeline Regulations and Gas Pipeline Regulations. These regulations provide for the safe design, construction and operation of onshore oil and gas pipelines.

The regulations, developed in consultation with industry, refer to accepted industry standards (Canadian Standards Association) for most of the technical requirements for pipelines.

The Onshore Pipeline Regulations will be amended to reflect the outcome of the Board's consideration of comments from industry and other interested parties on the recommendations, other than recommendation 5.9, which were included in the Board's report dated June 1986 on an accident in February 1985 on Interprovincial's pipeline system. (Please refer to *Hearings and Inquiries.*)

Offshore Pipeline Regulations

On 24 November 1988, the Board issued for comment the second draft of its new Offshore Pipeline Regulations. These regulations provide for the safe design, construction, and operation of offshore pipelines. The CSA preliminary standard, CSA Z187, Offshore Pipeline Standard, forms the technical basis for the Board's new Offshore Pipeline Regulations.

The new draft took into account the comments of interested parties on a previous draft. Subsequent to the review of the new draft, the regulations will be submitted for examination by the Department of Justice.

Rules of Practice and Procedure

The Board issued a revised draft of its Rules of Practice and Procedure and schedules on 7 May 1987. Although the revised rules must still be examined by the Department of Justice and published in the Canada Gazette, the Board has asked all parties to use them.

Regulations Respecting Crossings of Pipelines

The Board on 14 November 1988 issued new regulations governing the crossing of federally regulated pipelines by third parties. The regulations, which came into effect on 17 October 1988, are in two parts.

Part I of the regulations sets out the circumstances and conditions under which leave of the Board is not required before excavating on a pipeline right-of-way or constructing, for example, a highway, ditch or utility across a pipeline or its right-of-way. To meet the conditions for not requiring leave, the excavator or contractor must undertake certain responsibilities, such as following specified construction procedures and complying with the pipeline company's instructions in the field. Part I was given final approval by the Board on 17 October 1988. It did not require approval of the Governor in Council.

Part II of the regulations defines the responsibilities which are imposed on the pipeline company to ensure safety during construction of the crossing. Part II was approved by Governor in Council on 17 October 1988.

As a result of the passage of these regulations, General Order No. 2 has been amended, so that it no longer applies to any applications approved after 17 October 1988; however, its conditions apply to those approvals granted prior to the new regulations' coming into force. As well, the Pipeline Overhead Crossing Order was rescinded.

Crossing of Utilities by Pipelines

On 28 July 1988, the Board issued an Order Respecting the Crossing of Utilities by Pipelines, which sets aside the requirement for pipeline companies to obtain leave of the Board prior to constructing across a utility, road, or the like, if consent from the affected utility is first obtained.

... the crossing regulations provide increased flexibility to the affected pipeline companies and contractors.

The related responsibilities of pipeline companies with respect to crossings of utilities are prescribed in the Board's Onshore Pipeline Regulations. The order also amends General Order No. 1, which previously governed pipeline crossings, so that the conditions specified in General Order No. 1 continue to apply to all applications previously granted by the Board.

International Power Line Crossing Regulations

Following receipt of comments from interested parties on the draft *International Power Line Crossing Regulations*, the Board approved a new draft which was sent to the Department of Justice for examination in September 1987.

On advice from the Department of Justice, the regulations were divided into two sets of regulations, as follows:

1. International Power Line Crossings, Construction and Abandonment Regulations

   These regulations deal with crossings by international power lines as well as the company's responsibilities to maintain crossing records, abandon crossings, and report incidents. The regulations are subject to examination by the Department of Justice and approval by the Governor in Council.

2. International Power Line Crossings Regulations

   These regulations deal with crossings of international power lines and set out the terms and conditions under which leave of the Board to cross such power lines need not be obtained. The regulations have been approved in principle by the

Board and are subject to examination by the Department of Justice prior to implementation.

The scope of these regulations is being re-examined in view of possible amendments to the NEB Act as a result of the new electricity export policy recently announced.

National Energy Board Part VI Regulations

The Part VI Regulations are being amended to reflect recent changes in export regulation,. e.g., new natural gas surplus determination procedures and changes to electric power export regulation. As well, changes suggested by the Standing Joint Committee on Regulatory Scrutiny will be made, including the removal of certain provisions respecting export and import reporting requirements, which are now to be included in the Export and Import Reporting Regulations (see below).

The proposed amendments, when made, will require examination by the Department of Justice and approval by Governor in Council.

As part of the package of amendments implementing the Canada-United States Free Trade Agreement, subparagraph 6(2)(z)(iii) of the regulations has been revoked. This was the requirement that an applicant for a licence to export electricity provide evidence to demonstrate that the export price would not result in prices in the country to which the power is exported being materially less than the least cost alternative for power and energy at the same location within that country (the third price criterion).

Export and Import Reporting Regulations

These proposed regulations would require persons exporting oil, natural gas, or power, or importing natural gas under licence or order to provide certain information to the Board.

The information is similar to that currently required by the Part VI Regulations. However, on the suggestion of the Standing Joint Committee on Regulatory Scrutiny, the Board decided to remove the reporting requirements from the Part VI Regulations, and make new regulations under subsection 129(1) (formerly 88(1)) of the *Act*.

The regulations, which will require Governor in Council approval, will be processed together with the above-noted changes to the Part VI Regulations.

Cost Recovery Regulations

Pursuant to the government's cost recovery initiative introduced in the May 1985 Budget, the Board completed a feasibility study on recovering the costs of regulation from companies under its jurisdiction. The study received Treasury Board's approval in principle in November. Implementation of the initiative would require an amendment to the *National Energy Board Act*, consultation with industry, and the subsequent making of regulations. Prior to coming into force, the regulations would require examination by the Department of Justice and approval by Governor in Council.

"Implementation of the cost-recovery initiative would require an amendment to the Act, consultation with industry, and the subsequent making of regulations."

Amendments to the National Energy Board Act

Revised Statutes of Canada, 1985 - New Consolidation of the National Energy Board Act

On 12 December 1988, the Revised Statutes of Canada, 1985 came into force. This statute consolidation contains all Federal Statutes and amendments thereto up to 31 December 1984 including the *National Energy Board Act*. There were no substantive changes to the content of the *Act*, but extensive changes were made in the numbering of the sections.

Canada-U.S. Free Trade Agreement Implementation Act

In the *Canada-U.S. Free Trade Agreement Implementation Act*, amendments were made to Part VI of the *National Energy Board Act*. These amendments require the Board to give effect to the Canada-U.S. Free Trade Agreement when exercising its power and performing its duties and provide for the Governor in Council to make orders of general application respecting the interpretation of the Agreement and the manner in which the Board shall perform its duties to give effect to the Agreement.

The amendments set out requirements which must be met before exports can be restricted for the reasons referred to in Article 904 of the Free Trade Agreement. The amendments also allow the Governor in Council to make regulations exempting oil or gas that is exported to the United States from the application of any export prices which might be prescribed by regulation.

Organization

Person-Year Allocation: 358
Budget: $24.4 million

Members of the National Energy Board

The membership of the Board as of 31 December 1988 was:

Roland Priddle	Chairman
Jean-Guy Fredette	Vice-Chairman
Livia M. Thur	Associate Vice-Chairman
A. Digby Hunt	Associate Vice-Chairman
John R. Jenkins	Member
R. Byron Horner, Q.C.	Member
William G. Stewart	Member
A. Boyd Gilmour	Member
David B. Smith	Temporary Member
Kenneth W. Vollman	Temporary Member

David Smith was appointed a temporary Board Member on 22 September 1988 for a three-year period.

Kenneth Vollman was appointed a temporary Board Member on 30 September 1988 for a one-year period.

Board Members

The Board is pleased with the one-year extension of John R. Jenkins' term as a Member and the appointment of two new Temporary Members.

David B. Smith was appointed to a three-year term, effective 22 September 1988; he is located at the Board's office in Calgary. During his career, Mr. Smith has held senior positions with a number of Alberta-based companies and was the founding chairman of the Government of Alberta's Electric Energy Marketing Agency. He is a former senator and governor of the University of Alberta.

Kenneth W. Vollman was appointed to a one-year term, effective 30 September 1988. He worked for a major oil company in Calgary, then joined the National Energy Board in 1973 as a staff engineer. Mr. Vollman was named Director of the Energy Resources Branch in 1978, Director General of Energy Regulation in 1982 and Director General of Pipeline Regulation in 1985.

All three Members are professional engineers.

Standing Panels

The Board assigns much of its non-hearing regulatory work to three standing panels, composed of quorums of three to five Board Members.

The standing panels refer to the Board as a whole any matters involving Board policy, regulatory principles, or jurisdiction, or that warrant a public hearing. Except as noted below, panels do not issue or amend certificates or licences, or decide matters requiring a public hearing.

Members of the Board's standing panels as of year-end, and their responsibilities, are given below. The composition of standing panels is changed at appropriate intervals to provide members with an opportunity to become familiar with all aspects of the Board's work. The first-named member of each panel is the Panel Chairman. The Board's Chairman is an ex-officio member of all panels.

Energy Commodities Panel

R.B. Horner
J.-G. Fredette
L.M. Thur
A.D. Hunt
W.G. Stewart

Exercises the powers of the Board on matters relating to natural gas, propane, butanes, ethane, crude oil, petroleum products and electricity; regulates matters of traffic on oil and gas pipelines; advises the Minister on all commodity matters.

Pipeline Panel

A.B. Gilmour
J.R. Jenkins
R.B. Horner
K.W. Vollman
A.D. Hunt

Exercises the powers of the Board on matters relating to the construction, operation, and maintenance of pipelines, including safety and environmental considerations.

Financial Regulatory Panel

J.-G. Fredette
W.G. Stewart
A.B. Gilmour
J.R. Jenkins

Exercises the powers of the Board with respect to tariffs and tolls charged by pipeline companies under the Board's jurisdiction.

Staff

For the fiscal year 1988-89 the Board's budget was $24.4 million with a person-year allocation of 358.

The Board's offices and branches are described below; the inside back cover of this report lists the Board's senior staff.

The **Executive Director** is the Board's senior staff member and Chief Operating Officer. His responsibilities include the overall management of the Board, the acquisition and allocation of human and financial resources, the efficiency and effectiveness of Board activities and operations and the provision of advice on such matters as the Chairman may deem appropriate.

The ***Finance and Administration Branch*** coordinates and administers the financial and administrative policies under which the Board operates. It provides advice and services relating to accounts processing, financial planning and budgeting, and property, materiel, records and mail management. It also provides accounting services for the Northern Pipeline Agency.

The ***Personnel Branch*** provides advice and services in the areas of staffing, human resources planning, training, affirmative action programs for visible minorities, official languages, classification, staff relations, and pay and benefits.

The ***Planning and Review Branch*** is responsible for the Board's operational planning process, program review and internal audit.

The ***Information Technology Branch*** is responsible for corporate planning, computer systems services, word processing support, data processing support and telecommunications. This includes consultative service on computer operations, data management, program design and development, and an advisory service on the latest data processing techniques and applications. Branch responsibilities also include the integration of information and processing systems and services for the Board.

The **Director General, Energy Regulation** is responsible for the integration of all staff activities involving the regulation of energy exports and international power lines. This encompasses planning and coordinating all work affecting the regulation of international power lines, exports of oil, gas, and electricity under Part VI of the *National Energy Board Act*, and coordinating the analysis of all matters related to energy demand and supply.

The ***Economics Branch*** is responsible for evaluating the economic worth to Canada of applications before the Board to licence exports and to certificate pipeline and international power line projects. The Branch develops, in collaboration with others in the Board, general approaches to energy regulation and pipeline toll and tariff structures which involve considerations of economic efficacy. The Branch is responsible for preparing detailed projections of energy demand in Canada, macro-economic projections for the long-term performance of the Canadian economy, long-term outlooks for Canadian exports of natural gas and electricity to the American market and long-term projections of world oil prices, these activities largely in support of the Board's Supply and Demand Reports, market monitoring requirements and evaluations of export licence and facilities applications. The Branch also advises on the state of competitive conditions in energy markets, to the extent required for the Board's regulatory mandate.

The ***Energy Supply Branch*** is responsible for advising on matters relating to oil and gas exploration, drilling, production, and developing forecasts of oil and gas supply from conventional, oil sands, synthetic, and frontier sources. The Branch independently calculates the reserves and productive capacity of gas and oil. A part of this work is carried out in the Board's Calgary office.

The ***Electric Power Branch*** advises on matters relating to electricity export licensing, international power line certification, and regulatory surveillance. The Branch prepares supply and

demand forecasts for electricity that are used in dealing with electrical and other applications, reviews the American market for electricity, and provides advice on matters under federal jurisdiction that relate to the production, transportation, sale, and exchange of electricity.

The ***Gas and Oil Branch*** provides advice to the Board on oil and gas matters including evaluation of oil and gas markets in Canada and the United States and commercial transactions, and transmission, processing and distribution of oil and natural gas. It also synthesizes such information into assessments applicable to the Board's regulatory roles. The Branch is responsible for export regulation and monitoring and for matters related to traffic and discrimination in service for gas and oil pipelines. The Branch collects and disseminates data on exports including volumes and prices, and also prepares and supplies data on the consumption and transportation of crude oil, petroleum products, gas products and natural gas, incorporating estimates of short-term domestic and export demand and pipeline throughputs.

The **Director General, Pipeline Regulation** integrates all staff activities relating to the regulation of gas, oil, and petroleum products pipelines. This encompasses the design, construction, operation, safety, and environmental concerns specified under Part III of the *National Energy Board Act* and matters regarding traffic, tolls, and tariffs under Part IV of the *Act*.

The ***Environment Branch*** provides advice on the protection of the environment during the construction and operation of pipeline and power line facilities and on the protection of land-owner rights with respect to land acquisition. It advises on the environmental consequences of energy exports including the impact resulting from the generation of that power. In addition, Branch staff provide advice on the technical requirements related to third-party crossings on pipeline rights-of-way.

The ***Pipeline Engineering Branch*** advises on matters relating to pipeline certificates issued under the *National Energy Board Act* and for the regulation of the safety of pipeline facilities under the Board's jurisdiction. The Branch is the Board's principal source of advice on technical matters included in applications by pipeline companies for facilities construction. Board staff in this Branch also administer certain portions of the *Canada Labour Code* relating to pipeline worker safety.

The ***Financial Regulation Branch*** has the primary responsibility for tolls and tariffs, financial regulatory advice and costs of transportation under specific areas of the *National Energy Board Act* and the *Energy Administration Act*. It also audits the accounts of pipeline companies under the Board's jurisdiction and monitors the financial performance of pipelines.

The **Law Branch** provides legal advice to the Board on all matters relating to the Board's powers and responsibilities, acts as Counsel for the Board at public hearings, and represents the Board in proceedings before the Federal and Supreme Courts of Canada.

The **Office of the Secretary** receives all applications and submissions and coordinates their consideration by the Board. It advises on the scheduling of hearings, and makes all administrative arrangements for public hearings in Ottawa and across Canada. In addition, it provides media and public relations services, publications services and operates the Board's library. It administers the *Access to Information and Privacy Acts* and coordinates translation services with the in-house translation unit provided by Secretary of State.

Functions and Responsibilities

... oil, natural gas and electricity exports; pipeline and power line construction; pipeline tolls and tariffs; energy studies

Responsibilities Under the National Energy Board Act

The Board has two principal responsibilities under the *National Energy Board Act:*

- to regulate specific matters concerning oil, gas and electricity in the public interest, and
- to advise the government on the development and use of energy resources.

The Board has the authority to hold inquiries into any aspect of energy matters under its jurisdiction and to issue reports for the use and information of government, Parliament, and the general public.

The regulatory roles of the Board are described below.

Export Licences and Orders

The Board issues long-term licences for the export of oil, gas, and electricity. Such licences are normally granted following public hearings. In issuing export licences, the Board must satisfy itself that, among other things, the quantities of energy exported do not exceed the surplus remaining after making allowance for reasonably foreseeable Canadian requirements. The Board also issues orders for short-term exports of energy commodities subject to the restrictions imposed in the National Energy Board Part VI Regulations. In addition, the Board authorizes licences and orders for imports of natural gas.

Regulation of Pipeline Traffic, Tolls, Tariffs, and Accounting Practices

The Board regulates the traffic, tolls and tariffs of pipeline companies under federal jurisdiction to ensure that the tolls are just and reasonable and that there is no unjust discrimination in tariffs or service.

Certificates of Public Convenience and Necessity for Pipelines and Power Lines

The Board grants certificates to construct and operate interprovincial and international oil, gas, and petroleum products pipelines, as well as international and designated interprovincial electric power lines. Before a certificate is issued, the Board is required to hold a public hearing.

Detailed Routing - Pipelines and Power Lines

Persons whose lands may be affected by the route of a pipeline or power line approved by the Board can present their views to the Board at a local public hearing. Their evidence is considered in the determination of the final detailed route of the line.

Pipeline and Power Line Orders

The Board approves without a public hearing minor pipeline facilities or minor additions to, or modifications of, existing pipeline systems. These approvals are restricted to pipelines not more than 40 kilometres long and to installations such as tanks, pumps, compressors, and meter stations. The Board may also authorize, without a public hearing, the construction and operation of international power lines not exceeding 50 kilovolts.

Improving the Regulatory Process

A twenty-month consultative process with industry culminated in the Board's publication in October 1988 of a report on ways to improve and streamline the regulatory process.

The report, Improving the Regulatory Process, reviews 20 suggestions that were received from parties who appear before the Board in the public hearing process. The suggestions range from procedural matters to issues such as the feasibility of negotiated settlements and generic rulemaking, the clarification of the role of Board staff at hearings, the application of the rules of natural justice and the use of technical conferences. The report sets out the Board's current position on each of the 20 suggestions.

The Board's review and amendments to its regulatory process are aimed at providing a more efficient level of service to the benefit of all parties appearing before it.

Pipeline Safety

The Board's Onshore Pipeline Regulations provide for the safe design, construction, and operation of pipelines under the Board's jurisdiction. To ensure high standards of pipeline construction and operation, the Board carries out inspection programs and conducts investigations of pipeline system performance.

Pipeline Utility Crossings

Until the fall, the Board, to enhance public safety, granted prior approval to utilities crossing a pipeline, thereby ensuring design compatibility and reducing the possibility of damage to the pipeline. It also established the conditions under which a pipeline might be constructed across an existing utility, thereby ensuring the integrity of other utility services. Construction of a pipeline crossing navigable water or a railway requires permission of the Minister of Transport or the National Transportation Agency. (Please refer to *Legislation and Regulations)*

Environmental Protection

The Board considers the environmental implications of any proposal to build and operate an oil or gas pipeline or international power line. Companies preparing an application to the Board are encouraged to anticipate and discuss with all levels of government, public interest groups, and affected landowners the environmental issues and concerns that the proposed project could create. Such early planning with respect to environmental matters produces a more complete application addressing the appropriate alternatives and taking into account the public's concerns.

To ensure the highest level of environmental protection, the Board welcomes interventions at hearings from local environmental and public interest groups, as well as concerned individuals. To encourage public participation, the Board often convenes the hearing in the area where construction impacts would occur.

Foreign Delegations

During the year, the Board continued its practice of sharing information and experiences with the public, industry, other government departments, both provincial and federal, and with the governments of other countries. The Board received delegations from Brazil, China, Czechoslovakia, New Zealand, Norway and the United States. In general, the visitors were interested in the Board's approach and practices concerning financial, engineering and environmental regulation and found them to be useful references for application in their own countries. Board staff also briefed officials of the International Energy Agency in connection with its triennial review of energy policy in developed countries and participated in discussions with the United States on natural gas and energy trade under the auspices of the Canada-United States Consultative Mechanism.

After the issuance of a certificate or order, the Board audits the company's construction activities, and later, during the operation of the system, its routine maintenance and monitoring procedures. In that way, the Board can be satisfied that the company is continuing to protect the environment, and to ensure public health and safety.

Socio-Economic Impact

As part of its facilities approval process the Board considers local and regional social and economic concerns. The Board ensures that applicants take all reasonable steps to minimize project-induced negative impacts and to enhance project benefits accruing to local and regionally affected social groups. This can include a pre-project socio-economic impact assessment, a review of proposed socio-economic action plans, post-certificate monitoring of the success or failure of the action plans, and an assessment of actual project impacts.

Responsibilities Under the Energy Administration Act

The Board's responsibilities under the *Energy Administration Act* relate to the collection of oil export charges. Although the charges on crude oil and bulk petroleum product exports were reduced to zero in 1985, some activity remained in the areas of collection and write-off of outstanding assessments.

Responsibilities Under the Northern Pipeline Act

The Board's statutory responsibilities regarding the Canadian portion of the Alaska Natural Gas Transportation System relate mainly to the regulation of tolls and tariffs, the approval of pipe specifications, the granting of leave to open orders, and the regulation of the operation of the line. On 30 December, K.W. Vollman was appointed the Designated Officer for the Northern Pipeline Agency. His appointment is in response to an application by Foothills Pipe Lines (Yukon) Ltd. for authorization to construct and operate a new compressor station near Val Marie, Saskatchewan.

Labour Canada Agreement

A memorandum of understanding has been entered into by the Board and Labour Canada, whereby certain Board inspectors have been appointed safety officers by the Minister of Labour and have assumed operational responsibilities for matters of occupational safety and health as covered in Part IV of the

Labour Code. The agreement, which became effective on 23 February 1987, includes all pipelines under the Board's jurisidction but excludes certain areas such as head offices and regional offices of the pipeline companies; these will continue to be the responsibility of Labour Canada inspectors.

Public Access and Participation

The Board is a court of record. With specific exceptions relating to the confidentiality of certain competitive pricing information, the Board's deliberations are conducted on the basis of information that is publicly filed and publicly available in the Board's library in Ottawa and at its office in Calgary. For major applications and inquiries, the Board holds public hearings at which applicants and interested persons have full rights of participation in the official language of their choice. To give parties an opportunity to discuss their concerns or questions, the Board provides advance notice of its hearings by requiring that notices be published in newspapers and allows time for parties to respond to requests for information.

In addition, the Board issues quarterly regulatory agendas on matters coming before the Board as well as information bulletins and press releases on a variety of matters pertaining to Board activities.

Implementation of Board Decisions

When the Board is prepared to grant a certificate for a pipeline or a power line or to issue a licence for the export of natural gas or electricity, the import of natural gas, or the long-term export of oil, it so reports to the Governor in Council through the Minister of Energy, Mines and Resources. If a certificate is approved by the Governor in Council, the certificate is then issued by the Board. In the case of long-term export or import applications, licences issued by the Board go into effect on approval by the Governor in Council. A decision of the Board to refuse an application is not subject to referral to the Governor in Council. The Board's Reasons for Decision on applications are issued as public documents. The Board's decisions on tolls and tariffs are made without reference to the Governor in Council, as are the majority of the Board's day-to-day decisions.

Reviews and Appeals of Board Decisions

The Board may review, rescind, or change any of its orders or decisions, or rehear any application before deciding on it. It may also change a previously issued certificate or licence, but no such change is effective until approved by the Governor in Council.

Parties may apply to the Board requesting that a decision be reviewed. A decision may be appealed to the Federal Court of Appeal, with leave of that Court, provided the appeal is based on a point of law or jurisdiction.

Awarding of Costs

Except in detailed route hearings, the Board does not have the power to award costs to participants in its proceedings.

In the case of detailed route hearings, the Board may establish the appropriate level of compensation to be paid to a landowner for costs associated with participation in the hearing.

Reasons for Decisions Issued in 1988

1. FOOTHILLS PIPE LINES (YUKON) LTD. - Application dated 15 June 1987 for approval of the institution of interruptible service (Hearing Order RH-5-87) - December 1987

2. HYDRO-QUÉBEC - Application for exports to New England Utilities - (Hearing Order EH-3-87) - February 1988

3. HYDRO-QUÉBEC - Application for exports to Vermont Joint Owners - (Hearing Order EH-4-87) - February 1988

4. MAINE AND NEW BRUNSWICK ELECTRICAL POWER COMPANY, LIMITED - Application for exports to Maine Public Service Company - (Hearing Order EH-1-88) - May 1988

5. PAN ALBERTA GAS LTD. - Application pursuant to section 17 of the NEB Act for a change, alteration or variation to natural gas export licence GL-96 - (Hearing Order GH-1-88) - June 1988

6. TRANSCANADA PIPELINES LIMITED - Applications for facilities and approval of toll methodology and related tariff matters - (Hearing Order GH-2-87) - July 1988

7. TRANS MOUNTAIN PIPE LINE COMPANY LTD. - Application under Parts III and IV of the NEB Act - (Hearing Order OH-1-87, as amended) - July 1988

8. CANADIAN HUNTER EXPLORATION LTD. - Application for a licence to export natural gas - (Hearing Order GH-2-88) - August 1988

9. ST. CLAIR PIPELINES LTD. AND TRANSCANADA PIPELINES LIMITED - Pipeline Facilities - (Hearing Order GH-3-88) - October 1988

Other Major Documents Issued in 1988

1. Exports of Petroleum Products 1987 - March 1988
2. 1987 Annual Report - March 1988
3. Exports of Crude Oil 1987 - April 1988
4. Annual Report Pursuant to Access to Information Act and Privacy Act - June 1988
5. Canadian Electric Utilities Analysis of Generation and Trends - June 1988
6. Improving the Regulatory Process - Current Position on Submitters' Suggestions - September 1988
7. Canadian Energy Supply and Demand 1987-2005 - September 1988
8. Natural Gas Market Assessment - October 1988

Companies Under National

The following is a list of pipeline companies[1] which own and/or operate interprovincial or international pipelines under the Board's jurisdiction, companies that have been granted licences to export natural gas, and electric utilities that have been granted electricity export licences by the Board. References to the following companies in this report use the abbreviations indicated in brackets.

PIPELINES

Group 1 Gas

Alberta Natural Gas Company Ltd. (Alberta Natural Gas)
Foothills Pipe Lines (Yukon) Ltd. (Foothills)
Gazoduc TQM[2] (TQM)
TransCanada PipeLines Limited (TransCanada)
Westcoast Energy Inc. (Westcoast)

Group 2 Gas

Amoco Canada Petroleum Company Ltd. (Amoco) (inactive)
A.P.R. Pipeline Company Ltd. (A.P.R. Pipeline)
Canadian Hunter Exploration Ltd. (Canadian Hunter)
Canadian-Montana Pipe Line Company (Canadian-Montana)
Champion Pipe Line Corporation Limited (Champion)
Consumers' Gas (Canada) Limited (Consumers' Gas)
Dome Petroleum Limited (Dome) (inactive)
ICG Transmission Holdings Ltd. (ICG)
Many Islands Pipe Lines (Canada) Limited (Many Islands)
Mid-Continent Pipelines Limited (Mid-Continent)
Minell Pipeline Ltd. (Minell)
Murphy Oil Company Ltd. (Murphy Oil) (inactive)
Newex Resources Ltd. (Newex)
Niagara Gas Transmission Limited (Niagara Gas)
Novacorp International Pipelines Ltd. (Novacorp)
Peace River Transmission Company Limited (Peace River)
Saskatchewan Power Corporation (Saskatchewan Power)
Shell Canada Products Limited (Shell Canada)
St. Clair Pipelines Ltd. (St. Clair Pipelines)
Union Gas Limited (Union Gas)

Group 1 Oil and Products

Cochin Pipe Lines Ltd. (Cochin)
Interhome Energy Inc. (Interprovincial)[3]
Interprovincial Pipe Line (NW) Ltd., (IPL(NW))
Trans Mountain Pipe Line Company Ltd. (Trans Mountain)
Trans-Northern Pipelines Inc. (Trans-Northern)

Group 2 Oil and Products

Aurora Pipe Line Company (Aurora)
Dome Kerrobert Pipeline Ltd. (Dome Kerrobert)
Dome NGL Pipeline Ltd. (Dome NGL)
Dome NGL Pipeline Ltd. and Amoco Canada Petroleum Company Ltd (Dome NGL and Amoco)
Esso Resources Canada Limited (Esso Resources)
Manito Pipelines Ltd. (Manito)
Montreal Pipe Line Limited (Montreal)
Mont Resources Limited (Mont Resources)
Murphy Oil Company Ltd. (Murphy Oil)
Northwest Transmission Company Limited (Northwest Transmission)
Petroleum Transmission Company (Petroleum Transmission)
Polysar Hydrocarbons Limited (Polysar)
Sun Pipe Line Company (Sun)
Wascana Pipe Line Ltd. (Wascana)
Westspur Pipe Line Company (1985) Inc. (Westspur)
Windsor Storage Facility Joint Venture (Windsor Storage)
Yukon Pipelines Limited (Yukon)

1 The pipeline companies have been divided into two groups. Group 1 consists of the ten major pipeline companies which are audited by the Board on a regular basis and whose operating results are continuously monitored by the Board. The 36 companies under the Board's jurisdiction that are not included in Group 1 have been designated as Group 2 companies.

2 In December, Trans Québec & Maritimes Pipeline Inc. informed the Board that it had changed its name to *Gazoduc TQM*.

3 On 5 May, Interprovincial Pipe Line Limited changed its corporate name to Interhome Energy Inc. However, the pipeline operations are being conducted under the business name Interprovincial Pipe Line Company, a division of Interhome Energy Inc.

Energy Board Jurisdiction

GAS EXPORT LICENCE HOLDERS

Alberta and Southern Gas Co. Ltd. (Alberta and Southern)
Alberta Northeast Gas Ltd[4] (ANE)
AEC Oil and Gas Company (AEC)
ATCOR Ltd. (ATCOR)
Canadian Hunter Explorations Ltd. (Canadian Hunter)
Canadian-Montana Pipe Line Company (Canadian-Montana)
Columbia Gas Development of Canada Ltd. (Columbia Gas)
Consolidated Natural Gas Limited (Consolidated)
Esso Resources Canada Ltd. (Esso Resources)
ICG Transmission Holdings Ltd. (ICG Transmission)
KannGaz Producers Ltd. (KannGaz)
Many Islands Natural Gas (Canada) Limited (Many Islands)
Niagara Gas Transmission Limited (Niagara Gas)
Pan-Alberta Gas Ltd. (Pan-Alberta)
ProGas Limited (ProGas)
Shell Canada Limited (Shell)
Sulpetro Limited (Sulpetro)
Tenneco LNG Inc. (Tenneco LNG)
TransCanada PipeLines Limited (TransCanada)
Transcontinental Gas Pipe Line Corporation (Transcontinental)
Union Gas Limited (Union Gas)
Westcoast Transmission Company Limited (Westcoast)

ELECTRIC POWER LICENCEES AND CERTIFICATE HOLDERS[5]

Boise Cascade Canada Ltd. (Boise Cascade)
British Columbia Hydro and Power Authority (B.C. Hydro)
Canadian Niagara Power Company Limited (Canadian Niagara)
The Canadian Transit Company (Canadian Transit)
Cedars Rapids Transmission Company, Limited (Cedars Rapids)
Cominco Ltd. (Cominco)
Cornwall Electric (Cornwall Electric)[6]
The Detroit and Windsor Subway Company (Detroit and Windsor)
Fraser Inc. (Fraser Inc.)
Hydro-Québec (Hydro-Québec)
Maine and New Brunswick Electrical Power Company, Limited (Maine and New Brunswick)
The Manitoba Hydro-Electric Board (Manitoba Hydro)
The New Brunswick Electric Power Commission (New Brunswick Power)
Ontario Hydro (Ontario Hydro)
Saskatchewan Power Corporation (Saskatchewan Power)
West Kootenay Power and Light Company, Limited (West Kootenay)

4 ANE holds licences jointly with AEC, ATCOR, ProGas and TransCanada.
5 All the licensees, except Cornwall Electric, export over their own facilities, for which Board certificates have been issued. Cornwall Electric exports its power over the facilities of Cedars Rapids.
6 Effective 1 January 1988, St. Lawrence Power Company and Cornwall Electric were amalgamated into one company, known as Cornwall Electric.

Metric Conversion Table

The National Energy Board uses the International System of Units (SI). The energy units most commonly referred to in this report are the gigajoule (GJ) and the petajoule (PJ). A 30-litre gasoline fill-up contains about one gigajoule of energy. A petajoule is one million gigajoules. On average, a city the size of Toronto uses a petajoule of energy for all uses (heat, light, transportation, etc.) about every 15 hours.

The following conversion table is provided for the convenience of readers who may be more familiar with the Imperial System.

Approximate Conversion Factor

1 metre (m)	=	3.28 feet
1 kilometre (km)	=	0.62 mile
1 millimetre (mm)	=	0.039 inch
1 cubic metre (m^3) of oil	=	6.3 barrels
1 cubic metre (m^3) of natural gas	=	35.3 cubic feet
1 litre (L)	=	0.22 Imperial gallon
1 kilogram (kg)	=	2.20 pounds
1 gigajoule (GJ)	=	0.95 MMBtu, or 0.95 thousand cubic feet (Mcf) of natural gas at 1000 Btu/cf
1 petajoule (PJ)	=	0.95 billion cubic feet of natural gas, or 165 000 barrels of oil, or 0.28 terawatt hours of electricity

Abbreviations

gigajoule (GJ)	=	10^9J
terajoule (TJ)	=	10^{12}J
petajoule (PJ)	=	10^{15}J
exajoule (EJ)	=	10^{18}J
kilowatt (KW)	=	10^3 watts
megawatt (MW)	=	10^3 KW
megawatt hour (MW.h)	=	10^3 KW.h
gigawatt hour (GW.h)	=	10^6 KW.h
terawatt hour (TW.h)	=	10^9 KW.h

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Energy Overview

1. Canadian Energy Consumption(a) (Petajoules)

	1984	1985	1986	1987	1988(e)
Petroleum (b)	3159.7	3134.6	3133.4	3213.8	3344.4
Natural Gas (c)	2031.7	2147.6	2132.0	2138.5	2340.3
Hydroelectricity (d)	1020.7	1084.5	1110.7	1127.5	1099.1
Nuclear (d) (f)	632.0	714.2	841.6	905.4	969.8
Coal	1167.4	1122.1	1039.9	1117.7	1237.2
Renewable	460.4	510.3	538.7	546.2	560.6
TOTAL FOR CANADA	8471.8	8713.3	8796.3	9049.1	9551.4

a - Includes non-energy use, own use, and conversions and includes fuel for electricity export.
b - Includes LPGs.
c - Excludes reprocessing shrinkage and includes ethane.
d - Hydro and nuclear are converted at 3.6 PJ/TW.h. and 12.1 PJ/TW.h. respectively.

If the energy were converted using the heat content of 10.5 petajoules per terawatt hour, this assumes that the amount of primary energy associated with hydro and nuclear electricity is the amount which would be required if fossil fuels were used. The amount would be:

	1984	1985	1986	1987	1988(e)
Hydroelectricity and Nuclear	3525.5	3782.9	3969.9	4074.2	4047.3

e - Estimate.
f - Includes energy used to produce steam.

Energy Overview

2. Crude Oil and Equivalent Supply and Disposition (Thousands of Cubic Metres per Day)

	1984	1985	1986	1987	1988(e)
Supply					
Canadian Production (a)	243.5	248.8	249.0	259.6	276.8
Imports (b)	33.2	43.4	56.6	64.7	71.7
Total Supply (d)	276.7	292.2	305.6	324.3	348.5
Disposition					
Domestic (b)	227.7	221.1	216.7	226.5	238.3
Exports (c)	49.8	75.8	93.6	99.6	112.8
Total Disposition (d)	277.5	296.9	310.3	326.1	351.1

a - Source: NEB.
b - Source: NEB Form 153 - Refinery Receipts.
c - Source: NEB Form 308 - Crude Oil Exports.
d - Total Supply does not equal total disposition due to inventory changes, etc.
e - Estimate.

Energy Overview

3. Natural Gas Supply and Disposition (Billion Cubic Metres at 101.325 KPa and 15 degrees Celsius)

	1984	1985	1986	1987	1988(e)
Net Sales in Canada	47.6	50.2	48.8	47.8	52.1
Other Uses in Canada (a)	2.1	1.0	2.2	2.0	3.6
Exports	21.4	26.2	21.1	28.0	35.9
Total Deliveries (b)	71.1	77.4	72.1	77.8	91.6

a - Includes pipeline fuel and losses and other deliveries, less imports and inventory changes.
b - Marketable pipeline gas.

e - Estimate.

Energy Overview

4. Electricity Generation and Disposition (Terawatt Hours)

	1984	1985	1986	1987	1988
Total Generation	424.9	446.4	457.2	483.2	490.0 (p)
Imports (a)	0.3	0.2	0.2	0.5	2.8
Total Supply	425.2	446.6	457.4	483.7	492.8 (p)
Demand	387.6	405.1	422.1	438.3	463.1 (p)
Exports (a)	37.6	41.5	35.3	45.4	29.7

a - Excludes exchanges between Canada and the United States.
p - Preliminary.

Oil

1. Certificates Issued During 1988 Approving New Oil Pipeline Facilities Including Pipeline Construction Exceeding 40 Kilometres in Length

No Certificates were issued in 1988

Oil

2. Orders Issued During 1988 Approving New Oil Pipeline Facilities Including Pipeline Construction Not Exceeding 40 Kilometres in Length

Applicant	Order No.	Issued	Facilities	Estimated Cost ($)
Dome Petroleum Limited	XO-7-88	88-07-20	Windsor Dehydration Flush Connection and Interconnection, Ontario	35 700
Interprovincial Pipe Line Company , a divison of Interhome Energy Inc.	XO-2-88	88-05-18	Pipeline Section Replacement, Alberta-Saskatchewan	700 000
Sun Pipe Line Company	XO-5-88	88-07-22	Scraper Trap Modification, Ontario	4 000
Trans Mountain Pipe Line Company Ltd.	XO-1-88	88-04-06	Pump Replacements, Scraper Trap and Manifold Connections, British Columbia	84 153 600
	XO-6-88	88-06-28	Pipe Replacement, British Columbia	100 000
Trans-Northern Pipelines Inc.	XO-3-88	88-06-24	Pipeline Lease and Interconnecting Facilities Construction, Ontario	350 000
	XO-4-88	88-06-24	24-km Pipeline Lease, Ontario	NIL

Oil

3. Orders Issued During 1988 Approving Modifications and Additions to Existing Oil Pipeline Facilities

Applicant	Order No.	Issued	Facilities	Estimated Cost ($)
Interprovincial Pipe Line Company, a division of Interhome Energy Inc.	XOM-7-88	88-05-04	Replacement of Repair Sleeves, Audio/Visual and Furniture Purchases	1 510 000
	XOM-10-88	88-09-28	Modifications to Meter Manifold Valves, Scraper Trap	53 986 440
	XOM-11-88	88-10-26	Modifications to Hardisty Tank Farm and Leased Facilities at Edmonton	918 500
Interprovincial Pipe Line (NW) Ltd.	XOM-9-88	88-08-24	Modifications and Improvements to Pump Stations, Communications and Other Equipment	1 447 300
Montreal Pipe Line Limited	XOM-3-88	88-03-09	Replacement of Office and Maintenance Equipment	80 900
Petroleum Transmission Company	XOM-8-88	88-11-25	Test Equipment, Spare Parts, Terminal Control Room	162 600
Trans Mountain Pipe Line Company Ltd.	XOM-1-88	88-01-27	Permanent Liquid Scrubber, Weather Station	121 000
	XOM-13-88	88-11-29	Gangway at Westridge Dock, Battery Replacement at McMurphy Station	92 500
	XOM-14-88	88-12-14	Station and Tank Equipment, Buildings, Roads and Ground Improvement, Central Pipeline Control System	12 940 920
Trans-Northern Pipelines Inc.	XOM-2-88	88-02-24	Sleeve Replacement, Station and Office Modification, Equipment Purchase	18 380 000
	XOM-4-88	88-04-13	Pipeline Replacement, Terminal Modification	915 000
	XOM-6-88	88-05-04	Pipeline Replacement, Additional Pipe Installation	91 000
	XOM-12-88	88-11-04	Alternative Control Centre	115 000
Westspur Pipe Line Company (1985) Inc.	XOM-5-88	88-05-04	Control Instrumentation and Roof Replacement	990 000

Oil

4. Exports of Petroleum Products - 1988 (Cubic Metres)

Month	Motor Gasoline	Middle Distillate	Aviation Turbine Fuel	Heavy Fuel Oil	Partially Processed Oil	Total (a)
January	219 347	371 868	70 163	243 006	97 956	1 002 340
February	259 122	411 314	88 080	97 230	56 354	912 100
March	325 535	378 756	54 619	176 153	53 295	988 358
April	267 321	384 384	75 084	178 741	98 248	1 003 778
May	339 844	398 495	103 164	201 245	95 127	1 137 875
June	316 542	289 387	62 873	172 949	59 333	901 084
July	292 804	307 821	65 126	151 140	61 200	878 091
August	285 199	264 996	81 890	246 901	94 500	973 487
September	262 606	335 323	75 036	267 245	0	940 210
October	296 805	423 628	47 691	178 156	91 582	1 037 862
November	287 285	345 385	63 767	141 967	0	838 403
December	213 618	525 233	59 931	202 512	84 983	1 086 277
Total (m^3)	3 386 028	4 436 588	847 425	2 257 245	792 579	11 699 864
m^3/d	9 197	12 122	2 315	6 167	2 166	31 967

a - Excludes propane, butane, lubricants, greases, asphalt, petrochemicals etc.

Oil

5. Exports of Canadian Crude and Equivalent - 1987 and 1988 (Cubic Metres)

	1987		1988	
	Total	Daily Average	Total	Daily Average
Amoco Production Company	2 240 498	6 138	3 851 987	10 525
Ashland Oil Inc.	1 563 294	4 283	1 702 215	4 651
Cenex	1 072 939	2 940	1 125 721	3 076
Chinese Petroleum Corporation	113 367	310	273 409	747
Cibro Sales Corporation	35 587	98	-	-
Clark Oil & Refining Corporation	3 259 617	8 930	3 851 088	10 522
Conoco Inc.	1 735 076	4 754	1 583 220	4 326
Crystal Refining	24 523	67	42 936	117
Exxon Company, U.S.A.	1 511 229	4 140	2 034 390	5 558
Frontier Oil and Refining Co.	40 482	111	218 115	596
Gotco N.V.	31 980	88	-	-
Koch Refining Company	8 602 267	23 568	9 618 497	26 280
Laketon Refining Corp.	383 725	1 051	407 513	1 113
Marathon Petroleum Company	669 711	1 835	744 830	2 035
Mobil Oil Corporation	3 776 645	10 347	3 642 397	9 952
Montana Refining Company	165 113	452	271 988	743
Murphy Oil U.S.A. Inc.	398 346	1 091	723 215	1 976
NOCO Energy Corporation	290 175	795	-	-
Pacific Refining Company	6 398	18	-	-
Pecten Trading Company	28 819	79	81 226	222
Shell International Trading	-	-	34 517	94
Shell Oil Company	250 510	686	399 119	1 091
Sohio Supply Company	271 878	745	98 845	270
Sun Refining and Marketing Co.	1 926 118	5 277	2 685 132	7 336
Texaco U.S.A.	358 930	983	183 103	500
Total Petroleum, Inc.	86 024	236	132 532	[illegible]
Transworld Oil Limited	76 005	208	-	-
Union Oil Company of California	4 426 249	12 127	4 155 280	11 353
United Refining Company	2 804 570	7 684	3 193 570	8 726
U.S. Oil & Refining Co.	192 911	529	221 948	606
TOTAL	**36 342 986**	**99 570**	**41 276 789**	**112 778**

Oil

6. Exports of Canadian Crude Oil and Equivalent (Cubic metres per day)

	1984	1985	1986	1987	1988(e)
Light Crude Oil and Equivalent	13 857	33 416	41 281	44 213	50 214
Heavy Crude Oil	36 040	41 901	52 301	55 357	62 565
Total	**49 897**	**75 317**	**93 582**	**99 570**	**112 778**

Gas

1. Certificates Issued During 1988 Approving New Gas Pipeline Facilities Including Pipeline Construction Exceeding 40 Kilometres in Length

Applicant	Certificate No.	Issued	Facilities	Estimated Cost ($)
TransCanada PipeLines Limited	GC-71	88-09-19	Construction and Installation of One New 12.5-MW Compressor Unit at Each of the Six Existing Stations, Manitoba and Ontario	89 570 000
	GC-72	88-09-19	Construction of a 16.3-km, 914-mm Outside Diameter Loop; and Modifications to the Existing Metering Facilities at the Niagara Check Meter Station, Ontario	21 440 000
	GC-73	88-09-19	Construction of a New 30.9-km, 914-mm Outside Diameter Pipeline from Union Gas Limited's Dawn to Lisgar Pipeline Near Kirkwall to a New Hot Tap on the Niagara Line; and, Metering Facilities Near Kirkwall, Ontario	34 630 000
	GC-74	88-12-22	(i) Three new 26.1-MW Compressor Units, Ontario (ii) One 24.8-MW Compressor Unit, Ontario (iii) Two 22.8-MW Compressor Units, Manitoba, Ontario (iv) Two 3.7-MW Compressor Units, Ontario (v) Two 3.4-MW Compressor Units, Manitoba (vi) One 3.4-MW Compressor Unit, Ontario (vii) One 2.3-MW Compressor Unit, Ontario (viii) Axial Inlet Compressor Conversion, Ontario (ix) Spare Compressor Equipment and Standby Plant Items	161 970 000
	GC-75	88-12-22	(i) 5.9-km, 1219-mm Outside Diameter Loop, Saskatchewan and Manitoba (ii) 270.7-km, 1067-mm Outside Diameter Loop, Manitoba and Ontario (iii) 6.3-km, 508-mm Outside Diameter Loop, Quebec	294 000 000
	GC-76	88-12-22	(i) 42.9-km, 1219-mm Outside Diameter Loop, Saskatchewan and Manitoba (ii) 8.4-km, 508-mm Outside Diameter Loop, Quebec	44 000 000

Gas

2. Orders Issued During 1988 Approving New Gas Pipeline Facilities Including Pipeline Construction Not Exceeding 40 Kilometres in Length

Applicant	Order No.	Issued	Facilities	Estimated Cost ($)
Champion Pipe Line Corporation Limited	XG-1-88	88-01-14	25-m, 60-mm Outside Diameter Lateral and Sales Tap, Quebec	55 000
Dome NGL Pipeline Ltd.	XG-2-88	88-02-02	Eastern Delivery System Lateral to the Petrosar (Corunna) Plant Site, Ontario	1 843 000
Many Islands Pipe Lines (Canada) Limited	XG-4-88	88-03-02	Tie-In to an Existing Block Valve, Saskatchewan	11 000
	XG-29-88	88-11-04	50-m, 114.3-mm Outside Diameter Pipeline Cross-over, Alberta-Saskatchewan	4 000
Minell Pipeline Ltd.	XG-12-88	88-05-25	Meter Run at McAuley Odorizing Station, Manitoba	40 000
Newex Resources Ltd.	XG-3-88	88-03-03	Two 15-km, 114.3-mm Outside Diameter Pipelines, Alberta-Saskatchewan	473 500
Novacorp international Pipelines Ltd.	XG-11-88	88-06-22	406-mm Outside Diameter Line and Metering Facility, Ontario	1 065 000
Shell Canada Products Limited	XG-23-88	88-09-07	One Primary and Three Spare 168.3-mm Outside Diameter Pipelines, Ontario	1 200 000
St. Clair Pipelines Ltd.	XG-27-88	88-10-17	700-m, 610-mm Outside Diameter Pipeline, Ontario	1 375 000
TransCanada PipeLines Limited	XG-6-88	88-05-09	Aftercooler Installations and Upgrade of Turbine/Compressor Units, Ontario	31 700 000
	XG-7-88	88-05-09	8.8-km, 914-mm Loop of the Dawn Extension, Ontario	8 193 000
	XG-8-88	88-05-09	Two 16.7-km, 914-mm Loops of the Niagara Line and Relocation of Compressor Unit , Ontario	37 160 000
	XG-9-88	88-05-09	4.5-km, 508-mm Loop of the St. Mathieu Extension, Quebec	2 528 000
	XG-10-88	88-05-09	Compressor Relocations, Ontario	2 650 000

Gas

2. (Cont'd) Orders Issued During 1988 Approving New Gas Pipeline Facilities Including Pipeline Construction Not Exceeding 40 Kilometres in Length

Applicant	Order No.	Issued	Facilities	Estimated Cost ($)
	XG-13-88	88-06-15	19.1-km, 914-mm Loop of the Montreal Line, Ontario	15 654 000
	XG-17-88	88-08-24	Bowmanville and Dale Meter Stations, Ontario	732 000
	XG-18-88	88-08-10	Rugby Meter Station, Ontario	268 000
	XG-20-88	88-08-24	Bayhurst I Receipt Station, Saskatchewan	1 620 000
	XG-21-88	88-08-04	Ancaster Interconnection, Ontario	1 530 000
	XG-22-88	88-09-07	St. Polycarpe Meter Station, Quebec	150 000
	XG-24-88	88-09-19	16.3-km, 914-mm Outside Diameter Loop, Ontario	See GC-72
	XG-25-88	88-09-19	30.9-km, 914-mm Outside Diameter Kirkwall Line, Ontario	See GC-73
	XG-30-88	88-12-22	(i) 68.8-km, 1067-mm Outside Diameter Loop, Ontario (ii) 5.9-km, 1219-mm Outside Diameter Loop, Manitoba (iii) 201.9-km, 1067-mm Outside Diameter Loop, Manitoba and Ontario (iv) 6.3-km, 508-mm Outside Diameter Loop, Quebec	See GC-75
	XG-31-88	88-12-22	(i) 13.7-km, 1219-mm Outside Diameter Loop, Saskatchewan (ii) 4.7-km, 508-mm Outside Diameter Loop, Quebec (iii) 3.4-km, 1219-mm Outside Diameter Loop, Saskatchewan (iv) 25.8 km, 1219 mm Outside Diameter Loop, Manitoba (v) 3.7-km, 508-mm Outside Diameter Loop, Quebec	See GC-76

Gas

2. (Cont'd) Orders Issued During 1988 Approving New Gas Pipeline Facilities Including Pipeline Construction Not Exceeding 40 Kilometres in Length

Applicant	Order No.	Issued	Facilities	Estimated Cost ($)
Westcoast Energy Inc.	XG-5-88	88-04-07	Umbach Pipeline, British Columbia	3 450 000
	XG-14-88	88-07-27	Unocal Mason Meter Station No. 77, British Columbia	180 000
	XG-15-88	88-07-27	Aitken Creek Meter Station No. 36, British Columbia	1 120 000
	XG-16-88	88-08-10	North Jedney Pipeline Extension, British Columbia	3 190 000
	XG-19-88	88-08-17	Norcen Metering Facility, British Columbia	32 000
	XG-26-88	88-10-19	Redwillow Pipeline, British Columbia	1 400 000
	XG-28-88	88-10-19	Laprise Offload Project, British Columbia	14 900 000

Gas

3. Orders Issued During 1988 Approving Modifications and Additions to Existing Gas Pipeline Facilities

Applicant	Order No.	Issued	Facilities	Estimated Cost ($)
Alberta Natural Gas Company Ltd	XGM-1-88	88-01-27	Loop Tie-In, Equipment Upgrade	4 193 100
	XGM-7-88	88-04-13	Pipe Replacement	2 600 000
	XGM-19-88	88-12-02	Measurement and Regulating Equipment, Axial Inlet Conversions	3 283 250
Foothills Pipe Lines (Yukon) Ltd.	XGM-2-88	88-02-18	Datek Real Time Measurement System, Station 481	93 500
	XGM-4-88	88-03-02	Monitoring, Measurement and Valve Equipment, Eiectrical Upgrade	3 086 200
	XGM-12-88	88-08-17	Schrader Creek Vortex Meter	154 000
Many Islands Pipe Lines (Canada) Limited	XGM-15-88	88-10-26	Tie-In	5 800
TransCanada PipeLines Limited	XGM-3-88	88-03-02	Pipe Replacements, Valve Modification, Metering Upgrades	23 722 000
	XGM-6-88	88-04-06	Pipe Replacements	3 000 000
	XGM-9-88	88-07-06	Pipes, Valves and Controls Replacement	7 738 000
	XGM-14-88	88-09-19	Additional Contingency	300 000
	XGM-18-88	88-12-21	Pipeline Lowerings, Pipe Replacements, Cathodic Protection	20 445 000
Trans Québec & Maritimes Pipeline Inc.	XGM-13-88	88-08-30	Office Furniture, Transportation and Heavy Work Equipment Replacement	137 900
	XGM-16-88	88-10-26	Leasehold Improvements	678 080
Westcoast Energy Inc.	XGM-5-88	88-03-16	Pipe Replacement , Equipment Upgrade, Office Services Improvements	2 049 000
	XGM-8-88	88-05-18	Plant Improvements, Office and Mobile Equipment	559 000
	XGM-10-88	88-07-27	Electronic Measurement Equipment	366 400
	XGM-11-88	88-08-10	Replacement and Modification of Equipment	1 150 000
	XGM-17-88	88-11-04	Pipe Replacements, Equipment Upgrade, Office Services	437 000

Gas

4. Licences and Long-Term Orders to Export Natural Gas as at 31 December 1988

Exporter	Licence or Order Number	Point of Export	Term of Licence or Order From	To	Maximum Volumes Daily (10^3m^3)	Annual (10^6m^3)	Term (10^6m^3)
Alberta and Southern Gas Co. Ltd.	GL-99	Kingsgate, BC.	1986-12-18	1987-10-31	31 897.2	9 340.9	77 626.5
			1987-11-01	1994-10-31	31 897.2	10 580.4	
Alberta Northeast Gas Ltd. and AEC Oil and Gas Company	GL-105	Iroquois, Ont.	1988-11-01	2003-10-31	495.7	180.9	2 714.0
Alberta Northeast Gas Ltd. and ATCOR Ltd.	GL-104	Iroquois, Ont.	1988-11-01	2003-10-31	991.5	361.9	5 428.0
Alberta Northeast Gas Ltd. and ProGas Limited	GL-103	Iroquois, Ont.	1988-11-01	2003-10-31	1 869.6	682.4	10 236.0
Alberta Northeast Gas Ltd. and TransCanada PipeLines Limited	GL-102	Iroquois, Ont.	1988-11-01	2003-10-31	6 614.6	2 414.0	42 646.0
		Niagara Falls, Ont.	1988-11-01	2003-10-31	1 175.6	429.1	42 646.0
Canadian Hunter Explorations Ltd.	GL-107	Niagara Falls & Iroquois, Ont.	1990-11-01	2010-10-31	845.0	254.0	3 381.0
Canadian-Montana Pipe Line Company	GL-17	Aden/Cardston, Alta., Emerson, Man. & Niagara Falls, Ont.	1966-11-01	1967-10-31	339.9	103.4	4 652.8
			1967-11-01	1989-10-31	679.9	206.8	
	GL-25	Aden/Cardston, Alta., Emerson, Man. & Niagara Falls, Ont.	1968-11-01	1969-10-31	339.9	103.4	4 890.8
			1969-11-01	1991-10-31	679.9	206.8	
			1991-11-01	1993-10-31	390.9	119.0	
	GL-72	Aden, Alta.	1988-01-01	1988-10-31	1 133.1	236.1	1 085.7
			1988-11-01	1990-10-31	1 133.1	283.3	
			1990-11-01	1991-10-31	754.6	188.7	
			1991-11-01	1992-10-31	377.3	94.3	
	GO-3-79	Reagan Field, Alta.	1979-05-01	1993-12-31	30.0	10.3	105.0
Consolidated Natural Gas Limited	GL-75	Emerson, Man., & Monchy, Sask. combined maximum	1987-11-01	1988-09-14	3 824.3	1 299.2	2 792.0
			1988-09-15	1988-10-31	5 663.4	186.8	
			1988-11-01	1989-10-31	5 663.4	2 067.0	
		Maximum permitted at Monchy, Sask. as part of combined Emerson/Monchy volumes	1987-11-01	1988-09-14	1 912.2	649.6	1 396.0
			1988-09-15	1988-10-31	2 831.7	93.4	
			1988-11-01	1989-10-31	2 831.7	1 033.5	
Esso Resources Canada Ltd.	GL-82	Niagara Falls, Ont.	1984-02-05	1984-10-31	2 125.0	340.0	4 653.7
			1984-11-01	1988-10-31	2 125.0	775.6	
			1988-11-01	1989-10-31	2 125.0	745.9	
			1989-11-01	1990-10-31	850.0	310.2	
			1990-11-01	1991-10-31	425.0	155.1	

Gas

4. (Cont'd) Licences and Long-Term Orders to Export Natural Gas as at 31 December 1988

Exporter	Licence or Order Number	Point of Export	Term of Licence or Order From	To	Maximum Volumes Daily ($10^3 m^3$)	Annual ($10^6 m^3$)	Term ($10^6 m^3$)
ICG Transmission Holdings Ltd.	GL-28	Sprague, Man.	1970-11-01	1995-10-31	80.3	9.5	229.0
	GL-29	Fort Frances, Ont.	1970-11-01	1995-10-31	915.6	218.5	5 462.2
	GL-30 (a)	Sprague, Man.	1970-11-01	1995-10-31	1 321.8	344.0	8 498.1
KannGaz Producers Ltd.	GL-77	Niagara Falls, Ont.	1987-11-01	1996-10-31	3 540.0	1 292.1	13 567.0
			1996-11-01	1997-10-31	2 655.0	969.1	
			1997-11-01	1998-10-31	1 770.0	646.0	
			1998-11-01	1999-10-31	885.0	323.0	
Many Islands Natural Gas (Canada) Limited	GL-44 (b)	Emerson, Man.	1972-03-15	1992-10-31	4 249.2	1 274.8	18 951.3
Niagara Gas Transmission Limited	GL-78	Cornwall, Ont.	1987-11-01	1990-10-31	1 200.0	275.0	1 099.7
			1990-11-01	1991-10-31	799.2	183.1	
			1991-11-01	1992-10-31	399.2	91.6	
Pan-Alberta Gas Ltd.	GL-95	Emerson, Man., & Niagara Falls, Ont. combined maximum	1987-11-01	1996-10-31	4 332.5	1 581.4	16 604.7
			1996-11-01	1997-10-31	3 249.4	1 186.0	
			1997-11-01	1998-10-31	2 166.2	790.7	
			1998-11-01	1999-10-31	1 083.1	395.4	
		Maximum permitted at Niagara Falls, Ont. as part of combined Emerson/Niagara Falls volumes	1987-11-19	1996-10-31	1 442.7	526.6	
			1996-11-01	1997-10-31	1 082.1	394.9	
			1997-11-01	1998-10-31	721.3	263.3	
			1998-11-01	1999-10-31	360.7	131.7	
	GL-97	Monchy, Sask.	1984-12-20	1985-10-31	24 928.5	7 582.8	75 296.7
			1985-11-01	1994-10-31	24 928.5	8 294.4	
			1994-11-01	1995-10-31	16 602.4	5 524.1	
			1995-11-01	1996-10-31	8 301.2	2 762.0	
	GL-106	Kingsgate, BC.	1988-11-01	2012-10-31	7 478.6	2 488.3	59 719.2
ProGas Limited	GL-80	Niagara Falls, Ont.	1987-11-01	1996-10-31	1 420.0	518.3	5 442.1
			1996-11-01	1997-10-31	1 065.0	388.7	
			1997-11-01	1998-10-31	710.0	259.1	
			1998-11-01	1999-10-31	355.0	129.6	
	GL-81	Emerson, Man.	1987-11-01	1996-10-31	5 270.0	1 923.5	20 196.7
			1996-11-01	1997-10-31	3 952.5	1 442.6	
			1997-11-01	1998-10-31	2 635.0	961.7	
			1998-11-01	1999-10-31	1 317.5	480.9	

Gas

4. (Cont'd) Licences and Long-Term Orders to Export Natural Gas as at 31 December 1988

Exporter	Licence or Order Number	Point of Export	Term of Licence or Order From	To	Maximum Volumes Daily (10^3m^3)	Annual (10^6m^3)	Term (10^6m^3)
ProGas Limited (Cont'd)	GL-98	Emerson, Man., & Monchy, Sask. combined maximum	1986-08-13	1986-10-31	9 440.9	2 583.2	12 177.8
			1986-11-01	1987-10-31	7 552.7	2 480.0	
			1987-11-01	1990-10-31	9 440.9	3 100.0	
			1990-11-01	1991-10-31	7 552.7	2 480.0	
			1991-11-01	1992-10-31	5 664.5	1 860.0	
			1992-11-01	1993-10-31	3 776.4	1 240.0	
			1993-11-01	1994-10-31	1 888.2	620.0	
		Maximum permitted at Monchy, Sask. as part of combined Emerson/Monchy volumes	1986-08-13	1986-10-31	6 797.4	2 480.0	10 988.5
			1986-11-01	1987-10-31	3 776.3	1 240.0	
			1987-11-01	1990-10-31	4 720.4	1 550.0	
			1990-11-01	1991-10-31	3 776.3	1 240.0	
			1991-11-01	1992-10-31	2 832.2	930.0	
			1992-11-01	1993-10-31	2 125.0	698.0	
			1993-11-01	1994-10-31	1 888.2	620.0	
	GL-101	Niagara Falls, Ont.	1989-05-01	1989-10-31	1 420.0	260.6	10 340.0
			1989-11-01	1992-10-31	1 420.0	517.0	
			1992-11-01	2009-10-31	1 420.0	517.0	
Shell Canada Limited	GL-100	Highwater, Que.	1987-11-01	1998-10-31	1 110.0	300.0	7 100.0
			1998-11-01	1999-03-31	1 110.0	300.0	
		Niagara Falls, Ont.	1987-11-01	1998-10-31	1 390.0	400.0	
			1998-11-01	1999-03-31	1 390.0	400.0	
TransCanada PipeLines Limited	GL-18	Emerson, Man. & Niagara Falls, Ont.	1965-11-01	1966-10-31	708.2	1 226.6	33 993.4
			1966-11-01	1989-10-31	4 277.5	1 481.5	
	GL-19	Philipsburg, Que.	1965-11-01	1982-10-31	600.6	184.1	3 059.4
			1982-11-01	1983-10-31	634.5	184.1	
			1983-11-01	1984-10-31	657.2	184.1	
			1984-11-01	1986-10-31	702.5	184.1	
			1986-11-01	1987-10-31	793.2	184.1	
			1987-11-01	1988-10-31	849.8	184.1	
			1988-11-01	1989-10-31	906.5	184.1	
	GL-20	Emerson, Man.	1967-11-01	1991-10-31	2 662.8	909.3	21 670.8
	GL-21 (c)	Emerson, Man.	1968-11-05	1991-10-31	0.0	7 019.1	169 967.0
	GL-37	Emerson, Man.	1970-11-01	1990-10-31	5 546.6	2 030.1	40 601.0
	GL-38	Emerson, Man.	1970-11-01	1990-10-31	1 416.4	518.4	10 368.0
	GL-39	Emerson, Man.	1970-11-01	1990-10-31	204.0	74.6	1 493.0
	GL-42 (c)	Emerson, Man.	1971-04-15	1971-10-31	N/S	232.8	60 316.5
			1971-11-01	1994-10-31	N/S	2 612.3	

Gas

4. (Cont'd) Licences and Long-Term Orders to Export Natural Gas as at 31 December 1988

Exporter	Licence or Order Number	Point of Export	Term of Licence or Order From	To	Maximum Volumes Daily (10^3m^3)	Annual (10^6m^3)	Term (10^6m^3)
TransCanada PipeLines Limited (Cont'd)	GL-43	Emerson, Man.	1971-11-01	1991-10-31	N/S	481.6	9 631.5
	GL-83	Niagara Falls, Ont.	1984-11-01	1986-10-31	1 133.1	414.0	9 350.2
			1986-11-01	1994-10-31	2 620.3	959.0	
			1994-11-01	1995-10-31	1 521.3	556.8	
			1995-11-01	1996-10-31	774.3	283.4	
	GL-84	Niagara Falls, Ont.	1987-11-01	1988-10-31	142.0	51.8	2 378.0
			1988-11-01	1997-10-31	708.0	258.4	
	GL-86	Emerson, Man.	1987-11-01	1990-10-31	2 832.8	1 034.0	10 886.4
			1990-11-01	1991-10-31	2 832.8	1 036.8	
			1991-11-01	1994-10-31	2 832.8	1 034.0	
			1994-11-01	1995-10-31	2 832.8	1 036.8	
			1995-11-01	1996-10-31	2 832.8	1 034.0	
			1996-11-01	1997-10-31	2 188.7	798.9	
			1997-11-01	1998-10-31	1 416.4	517.0	
			1998-11-01	1999-10-31	708.2	259.2	
	GL-87	Emerson, Man.	1987-11-01	1990-10-31	2 832.8	1 034.0	10 886.4
			1990-11-01	1991-10-31	2 832.8	1 036.8	
			1991-11-01	1994-10-31	2 832.8	1 034.0	
			1994-11-01	1995-10-31	2 832.8	1 036.8	
			1995-11-01	1996-10-31	2 832.8	1 034.0	
			1996-11-01	1997-10-31	2 188.7	798.9	
			1997-11-01	1998-10-31	1 416.4	517.0	
			1998-11-01	1999-10-31	708.2	259.2	
	GL-89	Emerson, Man.	1984-11-01	1985-10-31	6 317.1	524.1	12 960.8
			1985-11-01	1986-10-31	6 317.1	1 957.3	
			1986-11-01	1990-10-31	6 317.1	2 096.3	
			1990-11-01	1991-10-31	4 207.2	1 396.1	
			1991-11-01	1992-10-31	2 103.6	698.1	
	GL-90	Niagara Falls, Ont.	1987-11-01	1988-10-31	1 416.4	518.4	5 443.2
			1988-11-01	1991-10-31	1 416.4	517.0	
			1991-11-01	1992-10-31	1 416.4	518.4	
			1992-11-01	1995-10-31	1 416.4	517.0	
			1995-11-01	1996-10-31	1 416.4	518.4	
			1996-11-01	1997-10-31	1 091.3	398.3	
			1997-11-01	1998-10-31	708.2	258.5	
			1998-11-01	1999-10-31	354.1	129.2	
Union Gas Limited	GL-92	Windsor, Ont.	1985-11-01	1990-10-31	1 100.0	284.0	1 703.7
			1990-11-01	1991-10-31	732.6	189.1	
			1991-11-01	1992-10-31	366.3	94.6	

Gas

4. (Cont'd) Licences and Long-Term Orders to Export Natural Gas as at 31 December 1988

Exporter	Licence or Order Number	Point of Export	Term of Licence or Order From	To	Maximum Volumes Daily (10^3m^3)	Annual (10^6m^3)	Term (10^6m^3)
Westcoast Energy Inc.	GL-41	Huntingdon/Kingsgate, B.C. & Monchy, Sask. combined maximum	1971-11-01	1972-10-31	20 773.9	7 223.1	143 495.2
			1972-11-01	1980-10-31	22 922.9	7 970.3	
			1980-11-01	1982-10-31	24 622.6	7 970.3	
			1982-11-01	1983-03-31	24 622.6	3 299.7	
			1983-04-01	1983-10-31	26 039.0	4 706.2	
			1983-11-01	1989-10-31	26 039.0	8 067.8	
		Maximum permitted at Kingsgate, BC. as part of combined Huntingdon/ Kingsgate/Monchy volumes	1973-11-01	1979-10-31	22 922.9	7 970.3	
			1983-04-01	1988-02-10	2 832.8	1 036.8	
			1988-02-11	1989-10-31	4 306.0	1 576.0	
		Maximum permitted at Monchy, Sask. as part of combined Huntingdon/ Kingsgate/Monchy volumes	1983-04-01	1988-02-10	1 416.4	517.0	
	GL-93	Huntingdon, BC.	1989-11-01	1992-10-31	8 498.3	3 101.9	13 958.6
			1992-11-01	1993-10-31	6 373.3	2 326.4	
			1993-11-01	1994-10-31	4 249.1	1 550.9	
			1994-11-01	1995-10-31	2 124.6	775.5	
	GL-94	Huntingdon/Kingsgate, B.C. & Monchy, Sask. combined maximum	1989-11-01	1990-10-31	13 731.0	4 637.1	9 269.5
			1990-11-01	1991-10-31	9 144.8	3 088.3	
			1991-11-01	1992-10-31	4 572.4	1 544.1	
		Maximum permitted at Kingsgate, BC. as part of combined Huntingdon/ Kingsgate/Monchy volumes	1989-11-01	1990-10-31	2 832.8	1 034.0	
			1990-11-01	1991-10-31	2 832.8	1 034.0	
			1991-11-01	1992-10-31	2 832.8	1 036.8	
		Maximum permitted at Monchy, Sask. as part of combined Huntingdon/ Kingsgate/Monchy volumes	1989-11-01	1990-10-31	1 416.4	517.0	
			1990-11-01	1991-10-31	1 416.4	517.0	
			1991-11-01	1992-10-31	1 416.4	517.0	

a - This licence authorizes an export near Sprague, Manitoba for import near Rainy River, Ont.

b - This licence authorizes the export of natural gas which the licensee has imported near Willow Creek, Sask. pursuant to Licence GLI-5.

c - This licence authorizes an export near Emerson, Manitoba for import near Sault Ste-Marie and Sarnia, Ont., to serve the eastern Canadian market.

N/S Not Specified.

Gas

5. Licences and Long-Term Orders to Import Natural Gas as at 31 December 1988

Importer	Licence or Order Number	Point of Import	Term of Licence or Order From	To	Maximum Volumes Daily (10^3m^3)	Annual (10^6m^3)	Term (10^6m^3)
Border Utilities Ltd.	GO-8-86	Coutts, Alta.	1986-01-28	1988-12-31	30.0	N/S	N/S
Canadian Western Natural Gas Company Ltd.	GO-117-88	Coutts, Alta.	1989-01-01	2005-12-31	30.0	N/S	N/S
ICG Transmission Holdings Ltd.	GL-30 (a)	Rainy River, Ont.	1970-11-01	1995-10-31	1 321.8	344.0	8 498.1
Many Islands Natural Gas (Canada) Limited	GLI-5 (b)	Willow Creek, Sask.	1972-03-15	1992-10-31	4 249.2	1 274.8	18 951.3
TransCanada PipeLines Limited	GL-21 (c)	Sault Ste-Marie and Sarnia, Ont.	1968-11-05	1991-10-31	N/S	7 019.1	169 967.0
	GL-42 (c)	Sault Ste-Marie and Sarnia, Ont.	1971-04-15	1971-10-31	N/S	232.8	60 316.5
			1971-11-01	1994-10-31	N/S	2 612.3	

a - This licence authorizes an import of natural gas which the licensee has exported near Sprague, Man.

b - This licence authorizes an import of natural gas which the licensee will subsequently export near Emerson, Manitoba, pursuant to Licence GL-44.

c - This licence authorizes an import of natural gas which the licensee has previously exported near Emerson, Manitoba. This natural gas serves Canadian markets.

N/S Not Specified.

Gas

6. Licences and Long-Term Orders to Export and/or Import Propane, Butanes, Ethane and Ethylene as at 31 December 1988

Exporter	Licence or Order Number	Points of Export	Points of Import	Term of Licence or Order From	Term of Licence or Order To	Maximum Volumes Annual (m^3)	Maximum Volumes Term (m^3)
PROPANE							
Amoco Canada Petroleum Company Ltd. (Export)	GL-32	Can/US Border (a)	-	1971-01-01	1972-12-31	92 698	4 281 799
				1973-01-01	1973-12-31	569 761	
				1974-01-01	1974-12-31	519 682	
				1975-01-01	1975-12-31	506 190	
				1976-01-01	1976-12-31	483 571	
				1977-01-01	1977-12-31	456 825	
				1978-01-01	1993-12-31	92 698	
				1994-01-01	1994-12-31	77 206	
Dome Petroleum Ltd. (Export)	GL-31	Can/US Border (a)	-	1971-01-01	1972-12-31	133 254	9 757 486
				1973-01-01	1973-12-31	924 999	
				1974-01-01	1974-12-31	870 078	
				1975-01-01	1975-12-31	847 301	
				1976-01-01	1976-12-31	812 936	
				1977-01-01	1977-12-31	775 793	
				1978-01-01	1978-12-31	744 761	
				1979-01-01	1979-12-31	716 983	
				1980-01-01	1980-12-31	688 571	
				1981-01-01	1981-12-31	656 190	
				1982-01-01	1982-12-31	620 476	
				1983-01-01	1986-12-31	133 254	
				1987-01-01	1987-12-31	143 809	
				1988-01-01	1988-12-31	193 016	
				1989-01-01	1989-12-31	196 984	
				1990-01-01	1990-12-31	169 047	
				1991-01-01	1991-12-31	165 873	
				1992-01-01	1992-12-31	165 079	
				1993-01-01	1993-12-31	162 098	
				1994-01-01	1994-12-31	103 968	
Amoco Canada Petroleum Company Limited (Export/Import)	EPR-918-79 (c)	Can/US Border (a)	Can/US Border (d)	1979-09-06	1996-01-31	N/S	N/S
(Import/Export)	EPR-941-87	Sarnia, Ont.	Can/US Border (c)	1987-06-09	1989-05-31	N/S	N/S
Canstates Energy (Export/Import)	EPR-939-87	Can/US Border (k)	Can/US Border (k)	1987-02-06	1991-12-31	N/S	N/S
	EPR-943-88	Can/US Border (a)	Can/US Border (d)	1988-01-01	1992-12-31	N/S	N/S
Dome Petroleum Limited (Export/Import)	EPR-917-79 (c)	Can/US Border (a)	Can/US Border (d)	1979-09-06	1996-01-31	N/S	N/S

Gas

6. (Cont'd) Licences and Long-Term Orders to Export and/or Import Propane, Butanes, Ethane and Ethylene as at 31 December 1988

Exporter	Licence or Order Number	Points of Export	Points of Import	Term of Licence or Order From	To	Maximum Volumes Annual (m^3)	Term (m^3)
Dome Petroleum Limited (Import/Export)	EPR-930-84	Sarnia, Ont.	Can/US Border (d)	1984-04-01	1984-12-31	458 335	N/S
				1985-01-01	1985-12-31	608 335	
				1986-01-01	1986-12-31	608 335	
				1987-01-01	1987-12-31	608 335	
				1988-01-01	1988-12-31	608 335	
				1989-01-01	1989-12-31	608 335	
				1990-01-01	1990-12-31	608 335	
				1991-01-01	1991-12-31	608 335	
				1992-01-01	1992-04-15	153 100	
ICG Liquid Gas Ltd (Export/Import)	EPR-944-88	Can/US Border (a)	Can/US Border (d)	1988-05-04	1993-04-30	N/S	N/S
Imperial Oil Limited (Export/Import)	EPR-922-80 (b)	Gretna, Man.	Sarnia, Ont.	1980-09-01	1990-08-31	N/S	N/S
PanCanadian Gas Products Limited (Export/Import)	EPR-919-79 (c)	Can/US Border (a)	Can/US Border (d)	1979-09-06	1991-01-31	N/S	N/S
Petrosar Limited (Export/Import)	EPR-940-87	Can/US Border (k)	Can/US Border (k)	1987-06-09	1992-06-30	N/S	N/S
Superior Propane Inc. (Export/Import)	EPR-942-87	Alameda, Sask.	Windsor, Ont.	1987-06-18	1992-06-30	N/S	N/S
Texaco Canada Inc. (Export/Import)	EPR-945-88	Can/US Border (a)	Can/US Border (d)	1988-06-13	1993-06-12	N/S	N/S
BUTANES							
Amoco Canada Petroleum Company Limited (Export/Import)	EBU-133-74 (e)	Gretna, Man.	Sarnia, Ont.	1974-07-01	1974-12-31	236 214	7 914 026
				1975-01-01	1975-12-31	521 326	
				1976-01-01	1976-12-31	661 936	
				1977-01-01	1977-12-31	653 789	
				1978-01-01	1978-12-31	659 681	
				1979-01-01	1979-12-31	618 088	
				1980-01-01	1980-12-31	575 893	
				1981-01-01	1981-12-31	540 176	
				1982-01-01	1982-12-31	488 674	
				1983-01-01	1983-12-31	423 848	
				1984-01-01	1984-12-31	374 315	
				1985-01-01	1985-12-31	-	
				1986-01-01	1986-12-31	-	
				1987-01-01	1987-12-31	-	
				1988-01-01	1988-12-31	-	
				1989-01-01	1989-12-31	-	

Gas

6. (Cont'd) Licences and Long-Term Orders to Export and/or Import Propane, Butanes, Ethane and Ethylene as at 31 December 1988

Exporter	Licence or Order Number	Points of Export	Points of Import	Term of Licence or Order From	Term of Licence or Order To	Maximum Volumes Annual (m^3)	Maximum Volumes Term (m^3)
Amoco Canada Petroleum Company Limited (Cont'd) (Export/Import)				1990-01-01	1990-12-31	-	
				1991-01-01	1991-12-31	-	
				1992-01-01	1992-12-31	-	
				1993-01-01	1993-12-31	-	
				1994-01-01	1994-12-31	-	
				1995-01-01	1995-12-31	-	
(Import/Export)	EBU-941-87	Sarnia, Ont.	Can/US Border (a)	1987-06-09	1989-05-31	N/S	N/S
Dome Petroleum Limited (Export/Import)	EBU-132-74 (e)	Gretna, Man.	Sarnia, Ont.	1974-07-01	1974-12-31	309 537	9 357 5[illegible]
				1975-01-01	1975-12-31	513 353	
				1976-01-01	1976-12-31	611 593	
				1977-01-01	1977-12-31	599 762	
				1978-01-01	1978-12-31	635 462	
				1979-01-01	1979-12-31	603 129	
				1980-01-01	1980-12-31	580 324	
				1981-01-01	1981-12-31	556 375	
				1982-01-01	1982-12-31	532 601	
				1983-01-01	1983-12-31	502 284	
				1984-01-01	1984-12-31	452 809	
				1985-01-01	1985-12-31	-	
				1986-01-01	1986-12-31	-	
				1987-01-01	1987-12-31	-	
				1988-01-01	1988-12-31	-	
				1989-01-01	1989-12-31	-	
				1990-01-01	1990-12-31	-	
				1991-01-01	1991-12-31	-	
				1992-01-01	1992-12-31	-	
				1993-01-01	1993-12-31	-	
				1994-01-01	1994-12-31	-	
				1995-01-01	1995-12-31	-	
Canstates Energy (Export/Import)	EBU-939-87	Sarnia, Ont.	Can/US Border (k)	1987-02-06	1991-12-31	N/S	N/S
	EBU-942-88	Can/US Border	Can/US Border (a)	1988-01-25	1992-12-31	N/S	N/S
Imperial Oil Limited (Export/Import)	EBU-911-80 (e)	Gretna, Man.	Sarnia, Ont.	1980-09-01	1990-08-31	N/S	N/S
PanCanadian Gas Products Limited (Export/Import)	EBU-134-74 (e)	Gretna, Man.	Sarnia, Ont.	1974-07-01	1974-12-31	167 570	3 774 595
				1975-01-01	1975-12-31	212 599	
				1976-01-01	1983-12-31	213 822	
				1984-01-01	1990-12-31	240 550	
Petrosar Limited (Export/Import)	EBU-940-87	Sarnia, Ont.	Can/US Border (a)	1987-06-01	1992-12-31	N/S	N/S

Gas

6. (Cont'd) Licences and Long-Term Orders to Export and/or Import Propane, Butanes, Ethane and Ethylene as at 31 December 1988

Exporter	Licence or Order Number	Points of Export	Points of Import	Term of Licence or Order From	Term of Licence or Order To	Maximum Volumes Annual (m^3)	Maximum Volumes Term (m^3)
Texaco Canada Inc. (Export/Import)	EBU-916-82	Gretna, Man.	Sarnia, Ont.	1982-07-01	1992-06-30	N/S	N/S
	EBU-943-88	Alameda, Sask.	Windsor, Ont.	1988-06-13	1993-06-12	N/S	N/S
Dome Petroleum Limited (Import/Export)	EBU-929-84	Sarnia, Ont.	Can/US Border (f)	1984-04-01	1984-12-31	340 650	N/S
				1985-01-01	1991-12-31	452 135	
				1992-01-01	1992-04-15	128 825	
ETHANE							
Dome Petroleum Limited (Export)	GL-51 (g)(h)	Export-Elmore, Sask. Re-Export - Windsor, Ont.	Windsor, Ont.	1979-06-21	1979-12-31	1 287 000	19 069 000
				1980-01-01	1980-12-31	1 090 000	
				1981-01-01	1981-12-31	935 000	
				1982-01-01	1982-12-31	1 114 000	
				1983-01-01	1983-12-31	1 241 000	
				1984-01-01	1984-12-31	1 424 000	
				1985-01-01	1985-12-31	2 000 000	
				1986-01-01	1986-12-31	2 731 000	
				1987-01-01	1987-12-31	2 304 000	
				1988-01-01	1988-12-31	1 891 000	
				1989-01-01	1989-12-31	1 301 000	
				1990-01-01	1990-12-31	765 000	
				1991-01-01	1991-12-31	602 000	
				1992-01-01	1992-12-31	280 000	
				1993-01-01	1993-12-31	104 000	
ETHYLENE						**Kilograms**	
Dow Chemical of Canada Limited (Export)	EYL-1-76 (i)	Elmore, Sask. Sarnia, Ont. Windsor, Ont.	Sarnia, Ont. Windsor, Ont.	1980-01-01	1989-12-31	158 757 340	1 587 573 400
Dow Chemical of Canada Limited (Export/Import)	EYL-2-76 (j)	Elmore, Sask.	Windsor, Ont.	1978-01-01	1997-12-31	181 438 810	N/S

a - For each licence or order the Canada/US Border export points include one or more of the following ports: Elmore, Sask., Gretna, Man., Sarnia and Windsor, Ont.

b - This order authorizes propane exports at Gretna, Man. for subsequent import at Sarnia, Ont.

c - This order authorizes propane exports at any point on the Canada/US Border for subsequent import of the same propane within 30 days after the day of export.

d - For each order the Canada/US Border import points include either Sarnia or Windsor, Ont. or both.

e - This order authorizes export of butanes at Gretna, Man. for subsequent import at Sarnia, Ont.

f - This order authorizes imports of butanes at Sarnia and Windsor, Ont., for subsequent export at any point along the

Gas

6. (Cont'd) Licences and Long-Term Orders to Export and/or Import Propane, Butanes, Ethane and Ethylene as at 31 December 1988

Exporter	Licence or Order Number	Points of Export	Points of Import	Term of Licence or Order From	Term of Licence or Order To	Maximum Volumes Annual (m^3)	Maximum Volumes Term (m^3)

Canada/US border (namely Sarnia and Windsor, Ont.).

g - This is an export licence which authorizes the export of ethane at Elmore, Sask., and Windsor, Ont. All or a portion of the quantity of ethane exported at Elmore, Sask., may be imported at Windsor, Ont., for subsequent re-export at Windsor, Ont.

h - Authorized exports of ethane in each year during the period 1982-01-01 to 1985-12-31 shall be reduced by the equivalent quantity of "make-up" volumes exported under Licence GL-47 which is in excess of 392 728 m3.

i - This is an export licence which authorizes the export of ethylene at Elmore, Sask., and at Sarnia and Windsor, Ontario. All or a portion of the quantity of ethylene exported at Elmore, Sask., may be imported at Sarnia and Windsor, Ontario for subsequent re-export at Sarnia and Windsor, Ont.

j - This order authorizes an export of ethylene at Elmore, Sask., for subsequent import at Windsor, Ont.

k - This licence authorizes export of propane which will be placed in storage in Marysville, Michigan, for subsequent return to Canada at Canada/US border near Sarnia, Ont.

Gas

7. Exports of Natural Gas (Millions of Cubic Metres)

Exporter	Licence or Order Number	1987	1988	Cumulative to 31 December 1988
Alberta and Southern Gas Co. Ltd.	GL-99	10 419.5	10 819.9	21 682.4
Amoco Canada Petroleum Company Ltd.	GO-10-85	7.3	-	75.9
	GO-104-86	12.4	2.0	14.4
	GO-67-87	0.0	5.3	5.3
	GO-80-88	-	28.6	28.6
Bonanza Resources Ltd.	GO-58-86	15.0	0.0	15.0
	GO-59-86	17.0	0.0	17.0
Bonus Gas Processors Corp.	GO-78-86	65.2	13.8	78.9
	GO-109-87	0.0	2.8	2.8
	GO-88-88	-	0.2	0.2
BP Resources Canada Limited	GO-68-88	-	26.5	26.5
Brymore Gas (Canada) Inc.	GO-80-86	9.7	0.0	12.3
Canadian Hydrocarbons Limited	GO-14-87	92.7	21.0	113.7
	GO-10-88	-	327.2	327.2
Canadian Occidental Petroleum Ltd.	GO-102-87	-	4.9	4.9
	GO-18-88	-	33.8	33.8
Canadian-Montana Pipe Line Company	GL-5	0.0	-	6 386.4
	GL-17	0.0	0.0	3 035.3
	GL-25	0.0	0.0	3 516.3
	GL-36	0.0	-	1 183.2
	GL-52	187.8	-	1 155.8
	GL-72	-	221.1	221.1
	GO-3-79	4.1	4.8	27.8
Canterra Energy Ltd.	GO-10-87	8.9	0.1	9.0
	GO-108-87	-	21.4	21.4
	GO-14-88	-	18.8	18.8
Carvin Natural Gas Marketing Ltd.	GO-114-88	-	8.9	8.9
Cherhill Resources Limited	GO-22-88	-	27.7	27.7
Chevron Canada Resources Limited	GO-105-87	0.0	0.8	0.8
	GO-21-88	-	1.4	1.4
	GO-43-88	-	3.4	3.4
	GO-86-88	-	3.7	3.7
Consolidated Natural Gas Limited	GL-61	429.6	0.0	5 205.0
	GL-75	186.1	1 106.2	1 292.3
	GO-89-86	142.2	36.0	246.4
	GO-92-86	137.9	97.6	308.2

Gas

7. (Cont'd) Exports of Natural Gas (Millions of Cubic Metres)

Exporter	Licence or Order Number	1987	1988	Cumulative to 31 December 1988
Czar Resources Ltd.	GO-30-86	46.6	24.5	100.5
	GO-28-88	-	95.5	95.5
Dome Petroleum Limited	GO-22-85	0.0	-	2.5
	GO-14-86	0.0	0.0	0.5
	GO-101-86	104.4	98.1	212.1
	GO-15-87	16.1	8.2	24.3
	GO-16-87	39.1	54.9	94.1
	GO-66-87	0.0	4.6	4.6
	GO-94-88	-	23.4	23.4
Encor Energy Corporation Inc.	GO-107-87	-	1.1	1.1
Esso Resources Canada Limited	GO-103-87	0.0	155.7	155.7
	GO-26-88	-	36.1	36.1
Esso Resources Canada Ltd and Transco Energy Mark.Co	GO-38-88	-	455.3	455.3
Esso Resources Canada Ltd.	GL-82	279.4	0.0	1 810.5
Hadson Canada Inc.	GO-90-87	0.0	1.6	1.6
ICG Transmission Holdings Ltd.	GL-28	0.1	0.0	129.7
	GL-29	0.7	0.0	2 690.3
	GL-30 (b)	171.5	200.0	4 614.0
	GO-98-86	6.1	-	8.6
	GO-99-86	57.5	-	74.0
	GO-100-86	14.8	-	18.7
	GO-82-87	2.1	7.3	9.4
	GO-83-87	17.4	88.9	106.3
	GO-96-88	-	20.6	20.6
	GO-99-88	-	2.5	2.5
Imperial Oil Limited	GO-84-86 (c)	102.5	79.3	204.2
KannGaz Producers Ltd.	GL-77	8.6	46.5	55.1
KM Gas Company	GO-81-86	33.8	3.4	37.2
Koch Hydrocarbons Canada	GO-101-87	0.0	5.5	5.5
Many Islands Natural Gas (Canada) Limited	GL-44 (a)	306.0	421.0	6 565.9
Maxus Energy Canada Ltd.	GO-23-85	4.2	-	5.9
Mobil Oil Canada	GO-9-88	-	2.0	2.0
	GO-11-88	-	480.3	480.3
Natgas Canada Inc.	GO-19-86	0.0	-	2.0

Gas

7. (Cont'd) Exports of Natural Gas (Millions of Cubic Metres)

Exporter	Licence or Order Number	1987	1988	Cumulative to 31 December 1988
Niagara Gas Transmission Limited	GL-55	141.5	-	1 052.3
	GL-78	46.2	233.1	279.3
	GO-90-86	28.7	-	75.3
North Canadian Oils Limited	GO-65-88	-	9.3	9.3
Northcan Energy Inc.	GO-30-88	-	6.1	6.1
Northridge Petroleum Marketing Inc.	GO-13-85	27.3	-	96.2
	GO-25-85	14.2	-	14.2
	GO-6-86	18.7	-	18.7
Northwest Pacific Energy Marketing Inc.	GO-115-88	-	4.7	4.7
Pan-Alberta Gas Ltd.	GL-96	2 625.6	2 148.6	9 820.5
	GL-97	2 201.8	3 084.0	10 864.6
	GL-106	-	414.8	414.8
	GO-96-86	0.0	-	180.0
	GO-48-87	2 053.5	3 702.1	5 755.6
	GO-8-88	-	311.2	311.2
Petro-Canada Inc.	GO-22-87	4.7	0.0	4.7
	GO-17-88	-	269.8	269.8
Placer Cego Petroleum	GO-19-87	26.8	4.5	31.3
	GO-115-87	-	1.8	1.8
	GO-15-88	-	37.9	37.9
Poco Petroleums Ltd.	GO-34-86	54.1	-	54.1
	GO-39-86	74.9	-	74.9
	GO-87-86	337.0	477.3	817.0
	GO-88-86	10.0	19.9	29.9
	GO-72-87	1.6	4.0	5.6
	GO-74-87	11.9	124.0	135.9
	GO-110-88	-	60.2	60.2
ProGas Limited	GL-98	532.6	1 589.0	2 341.1
	GO-26-86	155.1	-	155.1
	GO-27-86	40.9	-	40.9
	GO-28-86	17.6	-	17.6
	GO-29-86	155.1	-	155.1
	GO-97-86	62.5	-	139.8
	GO-85-87	129.7	192.3	322.0
	GO-24-88	-	3.4	3.4
Shell Canada Limited	GL-100	6.4	63.5	69.8
	GO-105-86	224.7	229.6	454.3
	GO-4-88	-	0.1	0.1
	GO-16-88	-	1.3	1.3
	GO-25-88	-	96.1	96.1

Gas

7. (Cont'd) Exports of Natural Gas (Millions of Cubic Metres)

Exporter	Licence or Order Number	1987	1988	Cumulative to 31 December 1988
Suncor Inc.	GO-112-87	-	30.0	30.0
Tarpon Gas Marketing Ltd.	GO-2-88	-	1.1	1.1
TransCanada PipeLines Limited	GL-18	0.0	0.0	20 552.8
	GL-19	92.9	156.5	2 391.0
	GL-20	276.5	588.3	14 384.7
	GL-21 (d)	6 262.0	6 821.6	117 546.7
	GL-37	513.4	1 252.9	29 023.7
	GL-38	0.0	0.0	6 770.7
	GL-39	0.0	0.0	915.0
	GL-42 (d)	2 330.6	2 538.8	37 583.8
	GL-43	0.0	0.0	1 335.8
	GL-83	412.4	915.5	2 157.3
	GL-84	0.0	19.1	19.1
	GL-86	-	0.0	0.0
	GL-87	-	0.0	0.0
	GL-89	0.0	0.0	604.0
	GO-40-86	184.5	190.1	374.5
	GO-83-86 (e)	0.0	-	3.8
	GO-86-86	21.7	-	56.0
	GO-91-86	32.3	-	48.1
	GO-93-86	384.1	-	614.6
	GO-103-86	481.3	212.4	693.7
	GO-27-87	33.3	6.8	40.0
	GO-33-87 (f)	55.6	0.0	55.6
	GO-37-87	662.8	2 507.3	3 170.2
	GO-111-87	0.0	391.9	391.9
	GO-23-88	-	111.4	111.4
Union Enterprises Ltd.	GO-4-87 (g)	3.9	0.0	3.9
Unocal Canada Limited	GO-75-88	-	6.1	6.1
Wainoco Oil Corporation	GO-55-87	3.3	42.8	46.1
Westcoast Energy Inc.	GL-4	148.9	-	29 195.3
	GL-41	3 403.5	1 909.1	78 526.8
	GO-17-86	0.0	-	1.6
	GO-94-86	0.0	-	77.6
	GO-95-86	0.0	-	771.2
Western Gas Marketing Limited	GO-63-88	-	28.2	28.2
GROSS EXPORTS		**37 252.0**	**45 973.5**	**444 917.1**
NET EXPORTS (h)		**28 020.0**	**35 912.8**	**278 339.3**

7. (Cont'd) Exports of Natural Gas (Millions of Cubic Metres)

Exporter	Licence or Order Number	1987	1988	Cumulative to 31 December 1988

a - This licence authorizes an export of gas which the licensee has imported near Willow Creek, Sask. pursuant to Licence GLI-5.
b - This licence authorizes an export of gas near Sprague, Man. for import near Rainy River, Ont.
c - This order authorizes an export of gas near Emerson, Man. in exchange for an import of ethane by Dome Petroleum Limited near Sarnia, Ont.
d - This licence authorizes an export of gas near Emerson, Man. for import near Sault Ste Marie and Sarnia, Ont. to serve the eastern Canadian markets.
e - This order authorizes an export of gas which the order holder has imported near Niagara Falls, Ont.
f - This order authorizes an export of gas as a pre-delivery of gas to Tennessee Gas Pipeline Company and for subsequent import near Niagara Falls, Ont.
g - This order authorizes an export of gas which the order holder has imported near Windsor, Ont.
h - Excludes volumes of licences/orders under footnotes.
- No data available

Gas

8. Imports of Natural Gas (Millions of Cubic Metres)

Importer	Licence or Order Number	1987	1988	Cumulative to 31 December 1988
Border Utilities Ltd.	GO-8-86	0.7	0.7	2.1
Canadian Western Natural Gas Company Limited	GO-69-86	0.4	0.0	0.7
	GO-56-87	0.0	0.2	0.2
	GO-70-88	0.0	0.2	0.2
ICG Transmission Holdings Ltd.	GL-30 (b)	171.5	200.0	4 614.0
Many Islands Natural Gas (Canada) Limited	GLI-5 (a)	309.7	425.6	6 663.9
Northridge Petroleum Marketing Inc.	GO-45-88	0.0	0.9	0.9
St. Clair Pipelines Ltd.	GO-71-88	0.0	36.0	36.0
The Consumers' Gas Company Ltd.	GO-40-88	0.0	8.1	8.1
	GO-57-88	0.0	27.3	27.3
TransCanada PipeLines Limited	GL-21 (c)	6 445.1	6 821.6	117 487.9
	GL-42 (c)	2 320.4	2 538.8	37 656.3
	GO-83-86 (d)	0.0	0.0	3.7
	GO-33-87 (e)	32.9	0.0	32.9
Union Enterprises Ltd.	GO-3-87 (f)	3.9	0.0	3.9
	GO-121-87	0.0	55.2	55.2
	GO-41-88	0.0	55.2	55.2
Union Gas Limited	GO-82-86	21.8	0.0	63.0
	GO-65-87	56.7	0.0	56.7
	GO-84-87	13.6	0.6	14.3
	GO-39-88	0.0	60.0	60.0
	GO-50-88	0.0	60.0	60.0
	GO-61-88	0.0	1.3	1.3
	GO-66-88	0.0	60.0	60.0
	GO-77-88	0.0	60.0	60.0
	GO-100-88	-	60.0	60.0
	GO-103-88	-	68.8	68.8
	GO-118-88	-	3.5	3.5
Western Gas Marketing Limited	GO-59-88	0.0	69.9	69.9
GROSS IMPORTS		**9 376.8**	**10 613.6**	**167 225.6**
NET IMPORTS (g)		**93.3**	**627.7**	**763.1**

Gas

8. (Cont'd) Imports of Natural Gas (Millions of Cubic Metres)

Importer	Licence or Order Number	1987	1988	Cumulative to 31 December 1988

a - This licence authorizes an import of gas which permits the licensee to subsequently export near Emerson, Man. pursuant to Licence GL-44.

b - This licence authorizes an import of gas which the licensee has previously exported near Sprague, Man.

c - This licence authorizes an import of gas which the licensee has previously exported near Emerson, Man. This natural gas serves Canadian markets.

d - This order authorizes an import of gas which permits the order holder to subsequently export near Niagara Falls, Ont.

e - This order authorizes an import of gas which the order holder has previously exported near Niagara Falls, Ont., as a pre-delivery of gas to Tennessee Gas Pipeline Company.

f - This order authorizes an import of gas which permits the order holder to subsequently export near Windsor, Ont.

g - Excludes volumes of licences/orders under footnotes.

\- No data available

Gas

9. Exports of Propane, Butanes, Ethane and Ethylene Under Licences and Orders (Cubic Metres)

Exporter	Licence or Order Number	1987 Actual	1988 Preliminary
PROPANE			
Amoco Canada Petroleum Company Limited	GL-32	92 698	92 697
	EPR-918-79 (a)	923 899	771 771
	EPR-934-86 (b)	2 286	-
	EPR-941-87(b)	3 285	5 776
Canstates Energy	EPR-939-87 (a)	5 862	0
	EPR-943-88 (a)	N/A	92 835
Dome Petroleum Limited	GL-31	143 809	193 016
	EPR-917-79 (a)	700 914	964 680
	EPR-930-84 (b)	447 713	255 587
ICG Liquid Gas Ltd.	EPR-944-88 (a)	N/A	17 750
Imperial Oil Limited	EPR-922-80 (a)	0	0
PanCanadian Gas Products Limited	GL-34	0	N/A
	EPR-919-79 (a)	242 054	280 156
Petro-Canada Inc.	EPR-934-86 (b)	0	N/A
Petrosar Limited	EPR-940-87 (a)	34 897	40 129
Procor Limited	EPR-935-86 (b)	0	N/A
Superior Propane Inc.	EPR-942-87 (a)	38 126	10 000
Texaco Canada Inc.	EPR-945-88 (a)	N/A	3 039
GROSS EXPORTS		**2 635 543**	**2 727 436**
NET EXPORTS (c)		**236 507**	**285 713**
BUTANES			
Amoco Canada Petroleum Company Limited	EBU-133-74 (a)	773 341	638 690
	EBU-933-86 (b)	7 988	-
	EBU-941-87 (b)	4 305	8 643
Canstates Energy	EBU-939-87 (a)	0	0
	EBU-942-88 (a)	N/A	0
Dome Petroleum Limited	EBU-132-74 (a)	712 589	816 006
	EBU-929-84 (b)	254 937	215 307
Imperial Oil Limited	EBU-911-80 (a)	0	0

Gas

9. (Cont'd) Exports of Propane, Butanes, Ethane and Ethylene Under Licences and Orders (Cubic Metres)

Exporter	Licence or Order Number	1987 Actual	1988 Preliminary
PanCanadian Gas Products Limited	EBU-134-74 (a)	126 620	128 632
Petro-Canada Inc.	EBU-934-86 (b)	0	N/A
Petrosar Limited	EBU-940-87 (a)	0	0
Procor Limited	EBU-935-86 (b)	0	N/A
Texaco Canada Inc.	EBU-916-82 (a)	0	14 437
	EBU-943-88 (a)	0	0
GROSS EXPORTS		**1 879 780**	**1 821 715**
NET EXPORTS (c)		**0**	**0**
ETHANE			
Dome Petroleum Limited	GL-51	839 879	871 841
GROSS EXPORTS		**839 879**	**871 841**
NET EXPORTS (c)		**0**	**0**
		Kilograms	
ETHYLENE			
Dow Chemical of Canada Limited	EYL-1-76	0	0
	EYL-2-76 (a)	127 715 403	151 660 454
GROSS EXPORTS		**127 715 403**	**151 660 454**
NET EXPORTS (c)		**0**	**0**

a - This licence/order authorizes an export of product for subsequent import.
b - This is an import-export licence/order whereby product exported has been previously imported.
c - Excludes volumes of licences/orders under footnotes.
N/A Not Applicable

Gas

10. Imports of Propane, Butanes, Ethane and Ethylene Under Licences and Orders (Cubic Metres)

Importer	Licence or Order Number	1987 Actual	1988 Preliminary
PROPANE			
Amoco Canada Petroleum Company Limited	EPR-918-79 (a)	952 356	773 025
	EPR-934-86 (b)	2 286	N/A
	EPR-941-87 (b)	3 285	5 776
Canstates Energy	EPR-939-87 (a)	5 862	0
	EPR-943-88 (a)	N/A	86 459
Dome Petroleum Limited	EPR-917-79 (a)	686 023	982 689
	EPR-930-84 (b)	347 258	263 710
ICG Liquid Gas Ltd.	EPR-944-88 (a)	N/A	18 988
Imperial Oil Limited	EPR-922-80 (a)	0	0
PanCanadian Gas Products Limited	EPR-919-79 (a)	242 054	280 156
Petro-Canada Inc.	EPR-934-86 (b)	3 065	N/A
Petrosar Limited	EPR-940-87 (a)	34 897	17 787
Procor Limited	EPR-935-86 (b)	0	N/A
Superior Propane Inc.	EPR-942-87 (a)	38 141	0
Texaco Canada Inc.	EPR-945-88 (a)	N/A	0
GROSS IMPORTS		**2 315 227**	**2 428 590**
NET IMPORTS (c)		**0**	**0**
BUTANES			
Amoco Canada Petroleum Company Limited	EBU-133-74 (a)	784 377	654 629
	EBU-933-86 (b)	7 988	N/A
	EBU-941-87 (b)	4 305	8 643
Canstates Energy	EBU-939-87 (a)	0	0
	EBU-942-88 (a)	N/A	0
Dome Petroleum Limited	EBU-132-74 (a)	683 764	826 675
	EBU-929-84 (b)	253 958	215 307
Imperial Oil Limited	EBU-911-80 (a)	0	0
PanCanadian Gas Products Limited	EBU-134-74 (a)	126 620	128 632
Petro-Canada Inc.	EBU-934-86 (b)	0	N/A

Gas

10. (Cont'd) Imports of Propane, Butanes, Ethane and Ethylene Under Licences and Orders (Cubic Metres)

Importer	Licence or Order Number	1987 Actual	1988 Preliminary
Petrosar Limited	EBU-940-87 (a)	0	0
Procor Limited	EBU-935-86 (b)	0	N/A
Texaco Canada Incorporated	EBU-916-82 (a)	0	14 437
	EBU-943-88 (a)	N/A	0
GROSS IMPORTS		**1 861 012**	**1 848 323**
NET IMPORTS (c)		**0**	**0**
ETHANE			
Dome Petroleum Limited	GL-51	782 805	917 227
	GO-85-86 (d)	119 993	N/A
	GO-44-87 (d)	119 980	N/A
	GO-114-87 (d)	N/A	119 991
	GO-60-88 (d)	N/A	119 241
GROSS IMPORTS		**1 022 778**	**1 156 459**
ETHYLENE		**Kilograms**	
Dow Chemical of Canada Limited	EYL-1-76	0	0
	EYL-2-76 (a)	115 751 879	151 660 454
GROSS IMPORTS		**115 751 879**	**151 660 454**
NET IMPORTS (c)		**0**	**0**

a - This licence/order authorizes an import of product which has been previously exported.
b - This is an import-export licence/order whereby product imported is subsequently exported.
c - Excludes volumes of licences/orders under footnotes.
d - This order authorizes an import of ethane at Sarnia, Ont. in exchange for natural gas exported at Emerson, Man. by Imperial Oil Limited.
N/A Not Applicable

Gas

11. Total Net Exports of Propane and Butanes (Cubic Metres)

Exporter	Propane		Butanes	
	1987 Actual	1988 Preliminary	1987 Actual	1988 Preliminary
Amoco Canada Petroleum Company Ltd. (a)	280 813	424 767	467 408	399 990
Atlantic Speedy Propane Limited	2 500	2 684	N/A	N/A
Burnwell Gas of Canada Ltd.	34 256	40 934	N/A	N/A
Can-Am Liquids Corp. Ltd.	7 054	N/A	1 178	N/A
Canadian Enterprise Gas Products Ltd.	9 423	10 379	27 938	30 884
Canadian Superior Oil Ltd.	6 316	N/A	18 113	N/A
CanPet Marketing Ltd.	7 080	14 078	11 072	11 154
CanStates Energy	19 297	69 558	93 153	129 058
Chevron Canada Resources	19 005	29 233	0	1 588
Commonwealth Petroleum Co.	N/A	25 293	N/A	N/A
Consumers' Co-Operative Refineries Ltd.	4 917	3 038	989	6 636
Dome Petroleum Limited (a)	887 902	1 372 358	615 007	772 540
Dominion Propane Corp.	179	112	0	0
Elbow River Resources Ltd.	0	0	8 778	9 649
Elgin Resources Limited	8 549	6 622	17 792	122
Enron Liquids Marketing Canada Ltd.	26 250	14 354	21 137	12 488
Ferrell Petroleum Inc.	N/A	31 746	N/A	N/A
Gas Supply (Minneapolis) Ltd.	7 938	N/A	N/A	N/A
Gibson Gas Liquids Ltd.	6 023	8 546	21 506	15 106
Gulf Canada Resources Ltd.	3 168	65 151	28 734	58 805
Gulliver Energy Ltd.	0	N/A	0	N/A
Home Oil Company Limited	21 676	20 086	31 779	20 321
Husky Oil Operations Ltd.	0	0	0	0
ICG Liquid Gas Ltd.	58 860	46 272	0	0
Imperial Oil Limited	242 303	213 144	402 753	369 845
Irving Oil Limited	437	5 516	0	20 039
Kildair Service Ltd.	0	387	0	0
Koch Hydrocarbon Canada	0	3 938	40 850	28 599
L.H.H. Enterprises Ltd.	0	580	0	0
L.P.G. Resources Canada Inc.	0	120	0	22 936
M-P. Oils Ltd	2 758	31 780	1 955	1 609
Mobil Oil Canada	94 961	77 106	115 867	115 508
Newfoundland Processing Ltd.	0	0	0	0
NGL Supply (1985) Ltd.	21 838	19 444	5 264	0
Olco Petroleum Group Inc.	0	0	0	0
PanCanadian Gas Products Ltd. (a)	115 564	110 790	124 701	133 523
Petro-Canada Hydrocarbons Inc.	363 569	604 134	292 510	319 757
Petro-Canada Inc.	0	N/A	0	N/A
Petrogas Marketing Ltd.	2 007	7 601	6 745	7 850
Petromont Inc.	N/A	8 381	3 803	13 448
Petrosol International Inc.	0	N/A	0	N/A
Petrowest Petroleum Ltd.	35 723	118 188	10 582	14 920
Raymond Gas Liquids Marketing Ltd.	3 740	N/A	6 252	N/A
Rivecal Energy Ltd.	0	0	0	0
Shell Canada Products Ltd.	163 897	167 289	214 634	226 940
Energy Transportation Inc.	23 760	31 640	73 170	18 511
Stittco Energy Ltd.	2 857	5 527	255	2 050
Suncor Inc.	4 055	0	54 689	39 708
Superior Propane Inc.	59	0	N/A	N/A
Texaco Canada Inc.	69 591	58 541	62 322	38 188

Gas

11. (Cont'd) Total Net Exports of Propane and Butanes (Cubic Metres)

Exporter	Propane		Butanes	
	1987 Actual	1988 Preliminary	1987 Actual	1988 Preliminary
Texaco Producing Inc.	N/A	15 396	N/A	0
Unocal Canada Ltd.	8 709	5 808	3 861	9 608
Ultramar Canada Inc.	N/A	0	N/A	0
Westcan Energy Ltd.	20 022	42 803	12 695	7 446
TOTAL	**2 587 056**	**3 713 334**	**2 797 492**	**2 858 826**

a - Includes net export volumes under licences.
N/A Not Applicable

Electricity
1. Certificates Issued During 1988 Approving International Power Lines

No Certificates were issued in 1988

Electricity
2. Orders Issued During 1988 Relating to International Power Lines

Applicant	Order No.	Issued	Facilities
Hydro-Québec	XE-1-88	88-08-18	One international power line extending from the distribution transformer designated as M2KIC, to a point on the international boundary line located 25 metres north-east of marker no. 353B in the municipality of Saint-Théophile. This single-circuit single-phase line, designated GEE.F.W.M., operates at a nominal voltage of 120/240 volts .
	XE-2-88	88-08-18	One international power line extending from the distribution transformer designated as M2KIC, to a point on the international boundary line located 25 metres north-east of marker no. 353B in the municipality of Saint-Théophile. This single-circuit single-phase line, designated GEE.F.H.F., operates at a nominal voltage of 120/240 volts .

Electricity
3. Licences Issued During 1988 Relating to the Export of Electricity

Applicant	Licence No.	Class	Megawatts	Annual Gigawatt Hours	Term From	Term To	Hearing Commenced	Issued
Hydro-Québec	EL-175	Firm	50	438	88-03-01	99-10-31	88-01-19	88-01-19
	EL-176	Firm	-	9 000	90-09-01	04-08-31	87-12-01	88-01-22
Maine and New Brunswick Electrical Power Company, Limited	EL-177	Firm	37	200	88-07-01	08-06-30	88-03-29	88-05-05

Electricity

4. Orders Issued During 1988 Relating to the Export of Electricity

4(a) Orders issued pursuant to Section 7 of the Part VI Regulations.

Applicant	Order No.	Class	Kilowatts	Annual Megawatt Hours	Term From	Term To	Issued
British Columbia Hydro and Power Authority	ELO-251	Firm	300	900	88-12-01	91-11-30	88-11-21
Canadian Niagara Power Company Limited	ELO-253	Firm	45 000	328 500	88-11-21	89-09-30	88-11-21
The Canadian Transit Company	ELO-239	Firm	100	25	88-08-01	91-07-31	88-05-26
Cornwall Electric	ELO-229	Interruptible	--	300 000	88-05-01	89-10-31	88-03-02
The Detroit and Windsor Subway Company	ELO-252	Firm	300	2 000	88-12-01	91-11-30	88-11-21
Hydro-Québec	ELO-223	Interruptible	--	946 000	88-03-02	91-02-28	88-03-02
	ELO-224	Firm	60 000	400 000	88-03-02	91-02-28	88-03-02
	ELO-230	Firm	20	35	88-04-15	91-04-14	88-03-15
	ELO-231	Firm	75	250	88-04-15	91-04-14	88-03-15
	ELO-232	Firm	20	100	88-04-15	91-04-14	88-03-15
	ELO-233	Firm	35	65	88-04-15	91-04-14	88-03-15
	ELO-234	Firm	65	200	88-04-15	91-04-14	88-03-15
	ELO-235	Firm	10	15	88-04-15	91-04-14	88-03-15
	ELO-236	Firm	2	2	88-04-15	91-04-14	88-03-15
	ELO-237	Firm	65	250	88-04-15	91-04-14	88-03-15
	ELO-254	Firm	34 000	7 900	88-12-16	90-03-14	88-12-08
	ELO-255	Firm	54 000	400 000	89-01-01	91-10-31	88-12-08
The Manitoba Hydro-Electric Board	ELO-241	Firm	900	7 884	88-10-01	91-09-30	88-06-07
New Brunswick Power	ELO-228	Firm	50 000	250 000	88-04-03	91-04-02	88-02-17
	ELO-240	Firm	60 000	200 380	88-06-01	88-10-31	88-05-31
	ELO-242	Firm	60 000	132 480	88-07-01	88-09-30	88-06-27
	ELO-243	Firm	10 000	18 360	88-08-01	88-10-31	88-07-22
	ELO-244	Firm	250	350	88-10-21	91-10-20	88-09-07
	ELO-245	Firm	40	75	88-10-21	91-10-20	88-09-07
	ELO-246	Firm	50	20	88-10-21	91-10-20	88-09-07
	ELO-247	Firm	60 000	400 000	88-11-01	89-10-31	88-10-31
	ELO-248	Firm	60 000	43 200	88-11-01	88-11-30	88-10-31
	ELO-249	Firm	60 000	43 200	88-11-01	88-11-30	88-10-31
	ELO-250	Firm	60 000	400 000	88-11-01	89-10-31	88-10-31
Ontario Hydro	ELO-238	Firm	100	200	88-05-15	91-05-14	88-04-28

Electricity

4. Orders Issued During 1988 Relating to the Export of Electricity (Cont'd)

4(b) Amending orders issued relating to export licences or orders

Applicant	Order No.	Issued	Comments
British Columbia Hydro and Power Authority	AO-1-EL-162	88-05-19	Amendment waiving the restriction of the export of energy generated at the Burrard plant.
	AO-1-EL-163	88-05-19	Amendment waiving the restriction of the export of energy generated at the Burrard plant.
	AO-2-EL-162	88-09-12	Amendment extending the term of the licence by six months.
Hydro-Québec	AO-2-EL-167	88-01-22	Amendments defining more clearly the quantities of power and energy to be exported.
	AO-1-EL-172	88-03-02	Amendments defining more clearly the quantities of power and energy to be exported.
	AO-1-ELO-237	88-08-18	Amendment authorizing export over the new international power lines authorized by Orders XE-1-88 and XE-2-88.
	AO-1-EL-175	88-10-27	Amendment authorizing export over any international power line authorized by the Board.

Electricity

5. Exports (Megawatt Hours)

Exporter	Licence Number	Licence Authorization		Gross Energy Exported			Value of Export ($)	
		Firm	Interruptible	Firm	Interruptible	Exchange(a)	Firm	Interruptible
NEW BRUNSWICK								
Fraser Inc.	ELO-214	400 000	--	379 650	--	--	19 477 422	--
Maine and New Brunswick Electrical Power Company, Limited	EL-22*	250 000	--	47 765	--	--	740 294	--
	EL-23*	--	25 000	--	--	--	--	--
	EL-177	200 000	--	36 202	--	--	1 109 011	--
New Brunswick Power	EL-137	876 000	--	841 711	--	- 7 430	45 216 127	--
	EL-138	876 000	--	841 711	--	- 7 430	49 675 018	--
	EL-139	92 000	--	52 581	--	- 2 936	3 267 906	--
	EL-140	--	6 482 400(b)	--	2 339 974	- 976	--	73 470 048
	EL-141	1 226 400	--	--	--	137 570	--	--
	EL-142	140 000	--	--	--	--	--	--
	EL-143	--	300 000	--	174 832	24 009	--	6 024 296
	EL-144	250 000	--	--	--	--	--	--
	EL-145	--	179 000	--	15 455	- 1 875	--	523 775
	EL-150	1 138 000	--	210 428	--	- 1 857	12 418 749	--
	ELO-212*	250 000	--	15 878	--	--	2 002 663	--
	ELO-226*	400 000	--	23 400	--	--	2 679 055	--
	ELO-228	250 000	--	--	--	--	--	--
	ELO-240*	200 380	--	31 020	--	--	2 138 104	--
	ELO-242*	132 480	--	20 940	--	--	1 103 051	--
	ELO-243*	18 360	--	--	--	--	61 140	--
from	ELO-244	--	--	--	--	--	--	--
to	ELO-246	445	--	257	--	--	23 667	--
	ELO-247	400 000	--	7 980	--	--	1 260 501	--
	ELO-248*	43 200	--	4 080	--	--	631 982	--
	ELO-249*	43 200	--	4 080	--	--	631 982	--
	ELO-250	400 000	--	4 111	--	--	765 272	--
TOTAL				**2 521 794**	**2 530 261**	**139 075**	**143 201 944**	**80 018 119**

Electricity

5. Exports (Megawatt Hours) (Cont'd)

Exporter	Licence Number	Licence Authorization		Gross Energy Exported			Value of Export ($)	
		Firm	Interruptible	Firm	Interruptible	Exchange(a)	Firm	Interruptible
QUEBEC								
Cedars Rapids Transmission Company, Limited	ELO-207	20 000	--	--	--	--	--	--
Hydro-Québec	EL-96	3 000 000	--	3 000 000	--	--	79 833 432	--
	EL-151	--	11 000 000	--	724 771	--	--	18 629 147
	EL-152	--	23 564 000(c)	--	1 339 247	--	--	38 562 303
	EL-153	--	23 564 000(c)	--	799 914	- 1 957	--	19 786 028
	EL-154	11 220 000(d)	--	282 241	--	--	12 074 333	--
	EL-155*	13 140 000(d)	--	89 823	--	--	3 235 404	--
	EL-156	25 000	--	--	--	--	--	--
	EL-165	--	3 000 000	--	--	--	--	--
	EL-166	--	4 000 000	--	2 959 945	--	--	70 606 429
	EL-167	--	6 920 000(e)	--	971 322	457	--	40 800 418
	EL-168	1 314 000	--	1 022 000	--	--	44 887 127	--
	EL-169	--	1 752 000(f)	--	135 117	- 88	--	2 547 203
	EL-171	222 100	--	82 672	--	--	3 704 843	--
	EL-172	657 000(g)	--	28 508	--	--	1 209 606	--
	EL-175	438 000	--	348 835	--	--	7 755 619	--
	ELO-213*	400 000	--	65 778	--	--	1 687 534	--
	ELO-223	--	946 000(h)	--	13 140	--	--	311 163
	ELO-224	400 000	--	--	--	--	--	--
from	ELO-220							
to	ELO-222							
and from	ELO-230							
to	ELO-237	1 957	--	912	--	--	51 749	--
TOTAL				4 920 769	6 943 456	- 1 588	154 439 647	191 242 691

Electricity

5. Exports (Megawatt Hours) (Cont'd)

Exporter	Licence Number	Licence Authorization		Gross Energy Exported			Value of Export ($)	
		Firm	Interruptible	Firm	Interruptible	Exchange(s)	Firm	Interruptible
ONTARIO								
Boise Cascade Canada Ltd.	ELO-211	--	70 000	--	80	--	--	2 778
Canadian Niagara Power Company Limited	EL-161	--	500 000	--	396 184	14 079	--	10 984 034
	ELO-253	--	328 500	--	--	--	--	--
The Canadian Transit Company	ELO-239	25	--	24	--	--	--	--
Cornwall Electric	EL-158	--	250 000	--	--	6 442	--	--
	EL-159	--	150 000	--	24 207	--	--	637 528
	EL-160	--	150 000	--	--	19 286	--	--
	ELO- 188	--	250 000	--	26 481	--	--	669 381
	ELO- 229	--	300 000	--	196 194	--	--	5 301 773
The Detroit and Windsor Subway Company	ELO-252	2 000	--	1 159	--	--	--	--
Ontario Hydro	EL-32	15 000	--	992	--	--	1 984	--
	EL-134	--	10 000 000	--	--	1 743 994	--	--
	EL-135	10 500 000	--	381 739	--	--	13 487 202	--
	EL-136	--	25 000 000(i)	--	4 595 736	31 921	--	139 537 654
	ELO-238	200	--	21	--	--	1 466	--
TOTAL				**383 935**	**5 238 882**	**1 815 722**	**13 490 652**	**157 133 148**
MANITOBA								
The Manitoba Hydro-Electric Board	EL-97	--	1 800 000	--	--	--	--	--
	EL-98	876 000	--	140 161	--	--	6 281 484	--
	EL-99	262 800	--	200 671	--	--	4 817 850	--
	EL-100	800 000	--	--	--	--	--	--
	EL-101	2 500 000	--	--	--	--	--	--
	EL-102	3 270 000	--	--	--	--	--	--
	EL-103	--	12 000 000(j)	--	380 457	- 94 940	--	8 971 803
and	ELO-210 ELO-241	7 899	--	2 173	--	--	93 878	--
TOTAL				**343 005**	**380 457**	**- 94 940**	**11 193 212**	**8 971 803**
SASKATCHEWAN								
Saskatchewan Power Corpoaration	EL-118	438 000(k)	--	--	--	30 200	--	--
	EL-119	--	876 000(l)	--	1 475	25 322	--	26 712
	EL-120	876 000(l)	--	--	--	--	--	--
TOTAL				--	**1 475**	**55 522**	--	**26 712**

Electricity

5. Exports (Megawatt Hours) (Cont'd)

Exporter	Licence Number	Licence Authorization Firm	Licence Authorization Interruptible	Gross Energy Exported Firm	Gross Energy Exported Interruptible	Gross Energy Exported Exchange(a)	Value of Export ($) Firm	Value of Export ($) Interruptible
BRITISH COLUMBIA								
British Columbia	EL-162	6 000 000	--	146 400	--	--	4 135 711	--
Hydro and Power	EL-163	--	15 000 000(m)	--	5 776 342	1 314 721	--	105 958 678
Authority	EL-164	--	3 000 000	--	--	732 988	--	--
	ELO-225	--	--	--	--	--	--	--
and	ELO-251	15 900	--	14 665	--	--	668 029	--
	n	--	--	--	--	328 392	--	--
Cominco Ltd.	ELO-216	50 000	--	--	--	--	--	--
	ELO-217	250 000	--	--	--	--	--	--
	ELO-218	--	1 000 000	--	526 840	10 661	--	10 055 416
	ELO-219	--	1 000 000	--	--	--	--	--
West Kootenay Power and Light Company, Limited	ELO-227	50	--	42	--	--	2 336	--
TOTAL				**161 107**	**6 303 182**	**2 386 762**	**4 806 076**	**116 014 094**
TOTAL CANADA(o)				**8 330 610**	**21 397 713**	**4 300 553**	**327 131 531**	**553 406 567**

a - Exchange is no value energy. It includes inadvertent and circulating flow, equichange, storage adjustment transfer and wheeling or carrier transfer.

b - Total exports should not exceed 6 482.4 GW.h less any amounts exported pursuant to another licence or order under which the energy is transmitted over the line authorized by the Certificate EC-III-8.

c - Total exports should not exceed 23 564 GW.h less any amounts exported pursuant to another licence under which the energy is transmitted over the lines authorized by the Certificates EC-III-15 and EC-10.

d - Total exports under EL-154 and EL-155 should not exceed 13 140 GW.h when combined together.

e - Total exports should not exceed 6 920 GW.h less any amounts exported pursuant to another licence under which the energy is transmitted over the lines authorized by certificate EC-III-21.

f - Total exports should not exceed 1 752 GW.h less any amounts exported under Licence EL-168.

g - Total exports should not exceed 657 GW.h less any amounts exported under Licence El-171 and Orders ELO-223 and ELO-224.

h - Total exports should not exceed 946 GW.h less any amounts exported under Licences EL-171, EL-172, EL-155 and Order ELO-224.

i - Total exports should not exceed 25 000 GW.h less any amounts exported under Licence EL-135.

j - Total exports should not exceed 12 000 GW.h less any amounts exported under Licences EL-97, EL-98, EL-99, EL-100, EL-101 and EL-102.

k - No value energy, energy to be returned.

l - Total exports under Licences EL-119 and EL-120 should not exceed 876 GW.h. when combined together.

m - Total exports should not exceed 15 000 GW.h less any amounts exported under Licence EL-162.

n - Energy exported in accordance with the Skagit River Valley Treaty which is not under the Board's jurisdiction.

o - Excludes $8 008 349 revenue for wheeling, transmission, unit rental and storage transfer charges.

* Expired during 1988

Financial Regulatory

1. 1988 Financial Information (a) - Group 1 Pipeline Companies

Oil (b)	Cochin ($000 000)	(%)	Interprovincial ($000 000)	(%)	IPL(NW) ($000 000)	(%)	Trans Mountain ($000 000)	(%)	Trans-Northern ($000 000)	(%)	Total
Revenue Requirement											
Return	10.4	37.0	70.8	26.3	43.8	57.5	11.1	19.3	4.8	20.1	140.9
Depreciation	5.2	18.5	35.9	13.4	14.8	19.4	3.9	6.8	2.0	8.4	61.8
Operating & Mtce.	10.8	38.4	114.2	42.5	5.3	7.0	24.1	42.0	13.2	55.2	167.6
Taxes	1.7	6.0	47.9	17.8	12.3	16.1	18.3	31.9	3.9	16.3	84.1
Total	28.1	100.0	268.8	100.0	76.2	100.0	57.4	100.0	23.9	100.0	454.4
Capitalization of Rate Base (c)											
Debt	N/A (d)	N/A	378.3	56.1	229.6	72.0	38.5	45.6	18.0	38.5	664.4
Preferred	N/A (d)	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deferred Taxes	N/A (d)	N/A	65.0	9.6	0.0	0.0	7.5	8.9	9.7	20.8	82.2
Common Equity	N/A (d)	N/A	231.4	34.3	89.1	28.0	38.5	45.6	19.0	40.7	378.0
Total	51.6	100.0	674.7 (e)	100.0	318.7	100.0	84.5	100.0	46.7	100.0	1 178.3
Return on Common Equity											
Approved	N/A (d)(f)	N/A	30.7	13.25	14.3	16.00	5.4	14.00	2.6	13.75	
Actual	10.4 (g)	19.44	31.1	13.45	14.3	16.00	6.9	17.87	2.6	13.58	

Gas (b)	Alberta Natural Gas ($000 000)	(%)	Foothills ($000 000)	(%)	TQM ($000 000)	(%)	TransCanada ($000 000)	(%)	Westcoast ($000 000)	(%)	Total
Revenue Requirement											
Return	2.1	8.0	69.9	39.1	51.1	70.6	325.3	35.6	90.0	32.7	538.4
Depreciation	2.2	8.4	35.9	20.1	13.3	18.4	95.1	10.4	30.0	10.9	176.5
Operating & Mtce.	18.6	71.3	42.6	23.8	6.1	8.4	320.3	35.0	84.3	30.6	471.9
Taxes	3.2	12.3	30.5	17.0	1.9	2.6	173.3	19.0	71.2	25.8	280.1
Total	26.1	100.0	178.9	100.0	72.4	100.0	914.0	100.0	275.5	100.0	1 466.9
Capitalization of Rate Base (c)											
Debt	10.2	65.0	421.6	60.4	287.0	75.0	1 399.5	54.5	449.4	54.9	2 567.7
Preferred	0.0	0.0	0.0	0.0	0.0	0.0	343.9	13.4	33.2	4.1	377.1
Deferred Taxes	0.0	0.0	118.1	16.9	0.0	0.0	75.9	3.0	75.5	9.2	269.5
Common Equity	5.5	35.0	157.8	22.6	95.7	25.0	747.2	29.1	259.8	31.8	1 266.0
Total	15.7	100.0	697.5	100.0	382.7	100.0	2 566.5 (e)	100.0	817.9 (e)	100.0	4 480.3
Return on Common Equity											
Approved	N/A (f)	N/A	22.5	14.25	13.2	13.75	109.5	14.65 (h)	35.7	13.75	
Actual	1.1	19.56	22.5	14.25	56.0	14.63	376.0	14.65	117.4	14.35	

a - Based on preliminary estimates.
b - Full names of companies are listed in Companies Under National Energy Board Jurisdiction.
c - Adjusted to show deferred taxes as a source of funds.
d - Not applicable as company is financed on a joint venture basis.
e - Excludes construction work in progress.
f - Not applicable as company is on a complaint basis.
g - Before interest and taxes.
h - Applied-for rate, company on interim tolls.

Senior Staff of the Board [1]

Office of the Executive Director
Robin D. Glass, Executive Director

Finance and Administration Branch
Wayne Ganim, Director

Personnel Branch
Jim Thompson, Director

Planning and Review Branch
Claire M.M. Scott, Director

Information Technology Branch
Don Emmens, Director

Energy Regulation Directorate
Peter L. Miles, Director General

Economics Branch
Mark D. Segal, Director

Energy Supply Branch
W. Alan Hiles, Director[2]

Electric Power Branch
Alex N. Karas, Director

Gas and Oil Branch
Ross M. White, Director

Pipeline Regulation Directorate
John S. Klenavic, Director General

Environment Branch[3]
Peter A. Carr, Director

Pipeline Engineering Branch[3]
Ed L.M. Gordon, Director

Financial Regulation Branch[3]
Henry K. Pau, Director

Law Branch
Sandra K. Fraser, General Counsel

Office of the Secretary
Louise Meagher, Secretary

1 As of 31 December 1988
2 Retired in February 1989
3 Branch names changed effective 1 February 1989